CRPL-F61

IONOSPHERIC DATA

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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
WASHINGTON, D. C.

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CONTENTS

SYMBOLS AND TERMINOLOGY; CONVENTIONS FOR DETERMINING MEDIAN VALUES

Beginning with data reported for January 1949, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Fifth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Stockholm, 1948, and given in detail on pages 2 to 10 of the report CRPL-F53, "Ionospheric Data," issued January 1949.

For symbols and terminology used with data prior to January 1949, see report IRPL-C61, "Report of International Radio Propagation Conference, Washington, 17 April to 5 May, 1944," previous issues of the F series, in particular, IRPL-F5, CRPL-F24, F33, F50, and report CRPL-7-1, "Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records."

Following the recommendations of the Washington (1944) and Stockholm (1948) conferences, beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

In addition to the conventions for the determination of medians given in Appendix 5 of Document No. 293 E of the Stockholm conference, which are listed on pages 9 and 10 of CRPL-F53, the following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given on pages 2-9 of CRPL-F53 (Appendixes 1-4 of Document No. 293 E referred to above).

a. For all ionospheric characteristics:

Values missing because of A, B, C, F, L, M, N, Q, R, S, or T (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F2 (and h'E near sunrise and sunset) missing for this reason are counted as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count. See CRPL-F38, page 9.

Values missing because of D are counted as equal to or greater than the upper limit of the recorder.

Values missing because of G are counted:
1. For foF2, as equal to or less than foFl.
2. For h'F2, as equal to or greater than the median.

Values missing because of W are counted:
1. For foF2, as equal to or less than the median when it is apparent that h'F2 is unusually high; otherwise, values missing because of W are omitted from the median count.
2. For h'F2, as equal to or greater than the median.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of G (no Es reflections observed, the equipment functioning normally otherwise) are counted as equal to or less than the median foE, or equal to or less than the lower frequency count of the recorder.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and Fl layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

MONTHLY AVERAGE AND MEDIAN VALUES OF WORLD-WIDE IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 48 and figures 1 to 96 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Commonwealth of Australia, Ionospheric Prediction Service of the Commonwealth Observatory:
Brisbane, Australia
Canberra, Australia
Hobart, Tasmania

French Ministry of Naval Armaments (Section for Scientific Research):
Fribourg, Germany

National Laboratory of Radio-Electricity (French Ionospheric Bureau):
Poitiers, France

All India Radio (Government of India), New Delhi, India:
Bombay, India
Delhi, India
Madras, India
Tiruchirapalli, India

Electrical Communications Laboratory, Ministry of Communications:
Fukaura, Japan
Shibata, Japan
Tokyo (Kokubunji), Japan
Wakkanai, Japan
Yamakawa, Japan

New Zealand Department of Scientific and Industrial Research:
Christchurch, New Zealand (Canterbury University College Observatory)

Norwegian Defense Research Establishment, Kjeller per Lillestrom, Norway:
Oslo, Norway

South African Council for Scientific and Industrial Research:
Johannesburg, Union of South Africa

United States Army Signal Corps:
Okinawa I.

National Bureau of Standards (Central Radio Propagation Laboratory):

Baton Rouge, Louisiana (Louisiana State University)
Boston, Massachusetts (Harvard University)
Guam I.
Huancayo, Peru (Instituto Geofisico de Huancayo)
Maui, Hawaii
Palmyra I.
San Francisco, California (Stanford University)
San Juan, Puerto Rico (University of Puerto Rico)
Trinidad, British West Indies
Washington, D. C.
White Sands, New Mexico

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

a. Differences in scaling records when spread echoes are present.

b. Omission of values when foF2 is less than or equal to foF1, leading to erroneously high values of monthly averages or median values.

c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of foE. Blank spaces at the beginning and end of columns of h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot No.				
	1949	1948	1947	1946	1945
December		114	126	85	38
November		115	124	83	36
October		116	119	81	23
September		117	121	79	22
August	111	123	122	77	20
July	108	125	116	73	
June	108	129	112	67	
May	108	130	109	67	
April	109	133	107	62	
March	111	133	105	51	
February	113	133	90	46	
January	112	130	88	42	

IONOSPHERIC DATA FOR EVERY DAY AND HOUR AT WASHINGTON, D. C.

The data given in tables 49 to 60 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols and Terminology; Conventions for Determining Median Values."

IONOSPHERE DISTURBANCES

Table 61 presents ionosphere character figures for Washington, D. C., during August 1949, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

Table 62 lists for the stations whose locations are given the sudden ionosphere disturbances observed on the continuous field intensity recordings made at the Sterling Radio Propagation Laboratory during August 1949.

Table 63 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Brentwood and Somerton, England, receiving stations of Cable and Wireless, Ltd., for various days in July and August, 1949.

Table 64 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Platanos, Argentina, receiving station of the International Telephone and Telegraph Corporation for two days in July 1949.

Table 65 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Point Reyes, California, receiving station of RCA Communications, Inc., for August 6, 19, and 30, and September 5 and 9, 1949.

Table 66 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, July 1949, compared with the CRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, the CRPL weekly radio propagation forecasts of probable disturbed periods, and the half-day Cheltenham, Maryland, geomagnetic K-figures.

The radio propagation quality figures are prepared from radio traffic and ionospheric data reported to the CRPL, in a manner basically the same as that described in IRPL-R31, "North Atlantic Radio Propagation Disturbances, October 1943 through October 1945," issued February 1, 1946. The scale conversions for each report are revised for use with the data beginning January 1948, and statistical weighting replaces what was, in effect, subjective weighting. Separate master distribution curves of the type described in IRPL-R31 were derived for the part of 1946 covered by each report; data received only since 1946 are compared with the master curve for the period of the available data. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. Each report is given a statistical weight which is the reciprocal of the departure from linearity. The half-daily radio propagation quality figure, beginning January 1948, is the weighted mean of the reports received for that period.

These radio propagation quality figures give a consensus of opinion of actual radio propagation conditions as reported by the half day over the two general areas. It should be borne in mind, however, that though the quality may be disturbed according to the CRPL scale, the cause of the disturbance is not necessarily known. There are many variables that must be considered. In addition to ionospheric storminess itself as the cause, conditions may be reported as disturbed because of seasonal characteristics such as are particularly evident in the pronounced day and night contrast over North Pacific paths during the winter months, or because of improper frequency usage for the path and time of day in question. Insofar as possible, frequency usage is included in rating the reports. Where the actual frequency is not shown in the report to the CRPL, it has been assumed that the report is made on the use of optimum working frequencies for the path and time of day in question. Since there is a possibility that all the disturbance shown by the quality figures is not due to ionospheric storminess alone, care should be taken in using the quality figures in research correlations with solar, auroral, geomagnetic, or other data. Nevertheless, these quality figures do reflect a consensus of opinion of actual radio propagation conditions as found on any one half day in either of the two general areas.

AMERICAN AND ZÜRICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 67 presents the daily American relative sunspot number, R_A, computed from observations communicated to CRPL by observers in America and abroad. Beginning with the observations for January 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of <u>all</u> observations received for each day. Details of the procedure are given in the Publication of the Astronomical Society of the Pacific, issued February 1949, in an article entitled "Reduction of Sunspot-Number Observations." The American relative sunspot number computed in this way is designated R_A. It is noted that a number of observatories abroad, including the Zürich observatory, are included in R_A. The scale of R_A was referred specifically to that of the Zürich relative sunspot numbers in the standard comparison period; since that time, R_A is influenced by the Zürich observations only in that Zürich proves to be a consistent observer and receives a high statistical weight. In addition, this table lists the daily provisional Zürich sunspot numbers, R_Z.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 68a and 68b are listed the intensities of the green (5303A) line of the emission spectrum of the solar corona as observed during August 1949 by the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colorado, for east and west limbs, respectively, at 5-degree intervals of position angle north and south of the solar equator at the limb. Beginning January 11, 1949, the actual measurements are on solar rotation coordinates rather than astronomical coordinates; thus values of the correction P given in previous coronal tables are omitted. The time of observation is given to the nearest tenth of a day, GCT. The tables of coronal observations in CRPL-F29 to F41 listed the data on astronomical coordinates; the present format on solar rotation coordinates is in conformity with the tables of CRPL-1-4, "Observations of the Solar Corona at Climax, 1944-46."

Tables 69a and 69b give similarly the intensities of the first red (6374A) coronal line; tables 70a and 70b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 68, 69 and 70: a, observation of low weight; -, corona not visible; and x, position angle not included in plate estimates.

ERRATA

1. CRPL-F60, p. 19, table 38: The latitude of Tiruchirapalli, India, should be 10.8°N instead of 12.0°N.

2. In the case of tables and graphs of data from Poitiers, France, first published in CRPL-F56 and continuing through this issue, the longitude should be changed from 2.0°W to 0.3°E. Points on the curves should be moved 0.13 of an hour to the right.

Table 1

Washington, D. C. (39.0°N, 77.5°W) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	5.4						2.7
01	280	5.2					2.2	2.8
02	280	5.0					2.4	2.7
03	280	4.7						2.7
04	270	4.3						2.8
05	270	3.9			---	---		2.8
06	260	4.9	250	---	120	2.1	1.9	3.1
07	280	5.8	240	4.1	110	2.7	3.4	3.1
08	330	6.5	220	4.7	110	3.1	3.8	3.0
09	350	7.6	220	4.7	110	3.4	3.8	2.9
10	330	7.3	205	4.9	100	3.7	3.5	2.9
11	350	7.5	210	(5.3)	100	3.8	3.4	2.8
12	350	7.8	200	5.3	100	4.0	3.0	2.8
13	350	7.9	220	5.4	100	3.9	3.0	2.8
14	350	7.8	220	(5.4)	110	3.8	3.0	2.8
15	340	7.8	230	4.9	110	3.6	2.1	2.8
16	320	7.8	230	4.8	110	3.3	2.3	2.8
17	300	7.7	235	4.4	110	2.9	3.6	2.8
18	280	7.9	250	---	120	2.3	3.3	2.9
19	250	8.4			---	---	2.9	2.9
20	250	7.9					2.3	2.9
21	250	7.0					2.3	2.8
22	260	6.5						2.8
23	270	5.9						2.8

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 2

Oslo, Norway (60.0°N, 11.0°E) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	6.9						
01	280	6.6					2.4	
02	280	8.0					2.5	
03	280	6.0					2.9	
04	296	8.0	260	---	---	1.9	3.3	
05	300	8.4	245	---	115	2.3	3.0	
06	340	6.8	240	4.0	110	2.6	3.2	
07	345	6.8	230	4.5	110	2.8	3.7	
08	350	7.0	215	4.7	105	3.0	3.9	
09	350	7.1	220	4.9	105	3.2	4.1	
10	350	7.0	210	5.0	100	3.4	4.5	
11	368	7.0	210	5.0	100	3.5	4.4	
12	370	6.8	210	6.0	100	3.6	4.6	
13	356	6.8	210	5.1	100	3.6	4.4	
14	378	6.8	210	5.1	100	3.5	4.1	
16	365	6.6	210	5.0	100	3.4	3.8	
16	350	8.8	215	4.9	106	3.2	3.9	
17	338	8.8	225	4.9	110	3.0	3.8	
18	300	6.7	240	---	110	2.8	3.7	
19	270	8.9	250	---	110	2.4	4.1	
20	260	6.8	242	---	130	2.1	3.6	
21	260	6.9	---	---	---	1.8	2.8	
22	268	6.9					2.5	
23	260	6.8					2.5	

Time: 15.0°E.
Sweep: 1.8 Mc to 10.0 Mc in 6 minutes, automatic operation.

Table 3

Boston, Massachusetts (42.4°N, 71.2°W) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	276	6.7						2.7
01	272	6.8						2.8
02	272	5.4						2.8
03	288	4.8						2.8
04	280	4.4						2.8
06	280	5.4						3.0
06	300	6.0	---	---				3.0
07	350	6.4	295	4.9				2.9
08	400	6.8	240	4.8				2.7
09	390	6.8	250	4.9				2.7
10	400	6.9	250	4.9				2.6
11	440	7.2	---	---				2.8
12	475	7.2	---	---				2.6
13	490	7.4	---	---				2.6
14	430	7.4	250	6.0				2.7
16	370	7.2	252	4.9				2.7
18	365	7.3	270	4.7				2.7
17	306	7.8	---	---				2.7
18	290	8.0	---	---				2.8
19	275	8.0	---	---				2.8
20	270	8.3	---	---				2.7
21	275	7.8						2.7
22	280	7.4						2.8
23	275	7.2						2.7

Time: 75.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 1 minute.

Table 4

San Francisco, California (37.4°N, 122.2°W) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.8					2.9	2.5
01	305	5.7					3.1	2.5
02	300	5.5					2.7	2.5
03	290	5.6					2.5	2.6
04	300	5.1						2.5
05	300	6.2			---	---	2.4	2.6
06	260	8.0	250	---	120	2.4	2.7	2.6
07	300	8.8	240	4.1	120	3.0	3.9	2.5
08	340	8.1	220	4.7	120	3.3	6.0	2.6
09	360	8.6	210	5.2	120	3.6	5.0	2.6
10	360	9.0	220	5.2	120	3.7	4.6	2.6
11	360	9.0	200	6.4	120	3.8	4.7	2.6
12	360	9.2	220	5.4	120	3.8		2.6
13	360	9.0	210	5.4	120	3.9		2.6
14	360	8.9	220	5.4	120	3.8		2.6
15	350	8.6	230	5.2	120	3.6		2.6
16	335	8.0	230	5.0	120	3.3	4.1	2.6
17	320	7.9	240	4.7	120	3.2	4.4	2.7
18	280	7.6	240	---	120	2.6	3.2	2.8
19	260	7.8			---	---	2.2	2.8
20	280	7.6					2.4	2.8
21	260	7.4					2.6	2.8
22	270	6.4					2.6	2.8
23	280	6.9					3.0	2.6

Time: 120.0°W.
Sweep: 1.3 Mc to 18.0 Mc in 4 minutes.

Table 5

White Sands, New Mexico (32.3°N, 106.5°W) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	6.4					5.2	2.5
01	300	6.4					4.2	2.6
02	280	5.9					3.2	2.6
03	280	5.5					3.0	2.6
04	280	5.3					2.9	2.6
05	300	5.0			---	---	3.9	2.7
06	250	6.3	250	---	110	(2.3)	4.9	2.8
07	300	7.4	(230)	4.4	110	2.8	5.0	2.7
08	340	8.3	230	5.0	110	3.2	5.1	2.6
09	360	8.6	220	5.2	110	3.5	5.4	2.5
10	380	9.2	210	5.3	110	3.7	5.9	2.5
11	380	9.4	220	5.3	110	3.8	5.4	2.5
12	380	10.0	220	5.3	110	3.9	6.0	2.5
13	370	9.8	220	5.3	110	3.9	5.4	2.6
14	360	9.8	220	5.2	110	3.9	5.4	2.6
15	360	9.4	230	5.1	110	3.7	5.2	2.6
16	360	9.1	230	5.0	110	3.4	5.0	2.6
17	340	8.5	230	4.6	110	3.0	4.7	2.7
18	(280)	8.2	---	---	110	2.4	5.1	2.7
19	280	8.1					5.0	2.8
20	260	8.0					4.8	2.8
21	270	7.3					3.3	2.7
22	280	6.9					3.8	2.7
23	300	6.3					4.9	2.6

Time: 105.0°W.
Sweep: 0.6 Mc to 14.0 Mc in 2 minutes.

Table 6

Baton Rouge, Louisiana (30.5°N, 91.2°W) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.3					3.1	3.0
01	280	6.2					2.6	3.0
02	270	5.8					2.7	3.0
03	270	5.5						3.0
04	280	4.8						3.0
05	280	5.1						3.1
06	280	6.2	240	---	120	2.4	3.7	3.2
07	290	7.0	230	4.4	120	2.9	4.2	3.1
08	300	7.4	220	4.6	120	3.3	4.2	3.0
09	340	7.6	215	5.0	120	3.5		2.9
10	385	7.7	225	5.2	120	3.6		2.8
11	380	8.7	220	5.3	120	(3.7)	4.0	2.8
12	375	8.8	200	(5.5)	(110)	(3.6)		2.8
13	370	9.1	230	5.5	---	(3.7)		2.8
14	350	9.2	235	5.3	115	3.6	4.0	2.8
15	350	8.8	230	5.0	110	3.5		2.8
16	330	8.3	225	4.8	110	3.4	3.9	2.9
17	310	8.3	230	4.4	120	(3.0)	4.0	2.9
18	290	7.9	260	---	120	2.5	4.0	3.0
19	270	7.6					3.6	3.0
20	240	7.5					3.5	3.0
21	265	6.9					3.8	3.0
22	280	8.6					3.5	2.9
23	290	6.4					4.0	2.9

Time: 90.0°W.
Sweep: 2.12 Mc to 15.3 Mc in 5 minutes, automatic operation.

Table 7

Okinawa I. (26.3°N, 127.7°E) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		9.6					4.1	2.8
01		8.8					4.8	3.0
02		(8.8)					3.7	2.9
03		8.2					3.6	(3.0)
04		7.0						2.9
05		6.6						3.0
06		7.1						3.2
07		8.2					3.6	3.3
08		7.8					4.8	3.1
09		7.6					5.6	3.0
10		8.0		---			6.0	2.6
11		9.0		(5.4)			6.2	2.6
12		10.2		---			5.8	2.7
13		10.8		5.6			5.4	2.7
14		11.2		(5.3)			5.5	2.7
15		11.6		(5.3)			5.1	2.8
16		12.0		---			5.9	2.8
17		12.2					5.2	2.8
18		12.0					5.4	3.0
19		10.5					5.0	3.0
20		9.4						2.8
21		8.9						2.7
22		8.6					3.4	2.7
23		8.4						2.7

Time: 135.0°E.
Sweep: 3.2 Mc to 18.0 Mc in 15 minutes, manual operation.

Table 8

Maui, Hawaii (20.6°N, 156.5°W) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	9.3					2.0	2.6
01	280	(9.1)					2.3	2.8
02	260	8.5					2.8	2.9
03	260	8.1					1.7	2.8
04	270	7.2					1.5	2.8
05	270	6.5					1.6	2.7
06	260	6.5			130	1.6	2.9	2.7
07	230	7.0	---	---	110	2.5	3.9	2.6
08	225	7.4	215	5.1	100	3.1	4.0	2.6
09	390	8.4	200	5.3	100	3.4	4.2	2.4
10	440	9.0	210	5.6	110	3.8	4.4	2.3
11	470	9.7	210	5.5	110	3.8	4.3	2.3
12	420	10.4	210	5.4	100	3.9	4.2	2.4
13	410	11.0	215	5.4	105	3.9	4.6	(2.5)
14	410	11.2	210	5.4	100	3.9	4.9	2.5
15	380	11.6	210	5.3	100	3.7	4.4	2.7
16	350	12.2	230	5.0	108	3.4	4.6	(2.6)
17	310	12.0	230	4.6	110	3.0	4.6	(2.9)
18	280	11.5	240	---	110	2.4	4.1	3.0
19	260	10.4					4.0	2.9
20	270	9.5					3.9	2.8
21	290	9.3					3.6	(2.7)
22	290	9.5					2.8	2.7
23	290	9.4					3.0	(2.7)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 9

San Juan, Puerto Rico (18.4°N, 66.1°W) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	9.0						2.7
01	280	9.2						2.8
02	270	8.8						2.8
03	275	8.1						2.8
04	260	8.1						2.8
05	255	7.3						2.9
06	265	7.2						2.8
07	270	7.8		---		---		2.9
08	295	8.5		4.5		3.2		2.9
09	330	9.0		5.0		3.5	4.3	2.7
10	365	9.6		5.3		3.7	4.5	2.5
11	390	10.2		5.5		3.8	5.0	2.5
12	380	10.6		5.5		3.9	5.1	2.8
13	380	11.1		5.5		3.9		2.8
14	360	11.4		5.4		3.9	5.1	2.5
15	360	11.5		5.1		3.8	4.5	2.8
16	350	11.2		4.9		3.6	4.7	2.6
17	320	11.2		4.4		3.1	4.3	2.6
18	300	10.2		---			4.3	2.7
19	280	10.0					4.2	2.7
20	290	9.7						2.7
21	290	9.5						2.6
22	300	9.5						2.6
23	300	9.3						2.7

Time: 60.0°W.
Sweep: 2.8 Mc to 13.0 Mc in 9 minutes, supplemented by manual operation.

Table 10

Guam I. (13.6°N, 144.9°E) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	(7.3)					2.6	(2.6)
01	300	(8.8)						(2.7)
02	290	7.2					1.7	2.7
03	275	(7.0)						(3.0)
04	250	7.0					2.0	3.1
05	220	6.6						3.3
06	240	6.3					2.4	3.2
07	245	7.4	220	---	120	---	3.2	3.1
08	260	8.2	205	---	100	3.2	3.8	2.8
09	270	9.1	200	---	100	3.6	4.0	2.6
10	400	9.6	210	5.3	100	3.8	4.4	2.4
11	400	10.0	200	5.4	---	---	4.5	2.3
12	405	10.0	200	5.4	---	---	4.4	2.3
13	430	10.7	200	5.5	110	(4.0)	4.8	2.3
14	430	(10.8)	200	5.4	100	4.0	4.8	(2.5)
15	445	11.0	210	5.4	100	4.0	5.2	2.4
16	400	11.0	215	---	100	3.4	5.3	2.4
17	400	(11.1)	230	---	---	---	5.8	2.5
18	410	(11.2)	260	---	---	---	5.3	(2.5)
19	345	(10.5)	285	---	---	---	4.2	2.5
20	370	10.0					3.8	2.4
21	360	(9.0)						---
22	340	---					2.2	---
23	340	(7.4)						(2.8)

Time: 150.0°E.
Sweep: 1.0 Mc to 28.0 Mc in 15 seconds.

Table 11

Trinidad, Brit.West Indies (10.6°N, 61.2°W) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	10.2						2.9
01	260	9.7						3.0
02	250	9.0						3.0
03	260	8.6						3.0
04	250	8.4						3.3
05	250	7.6					2.1	3.1
06	250	7.3			---	---	3.4	3.2
07	240	7.6			120	2.7	3.4	3.1
08	250	7.8	220	4.6	120	3.2	3.8	3.0
09	300	8.6	230	5.2	120	3.7	4.4	2.8
10	340	9.4	220	5.6	120	3.8	4.8	2.6
11	375	10.2	200	5.5	120	4.0	4.8	2.6
12	380	11.1	220	5.5	110	4.1	5.0	2.6
13	370	11.8	210	5.5	120	4.1	5.0	2.7
14	350	12.2	220	5.5	130	3.9	5.1	2.7
15	340	11.9	230	5.2	120	3.8	5.0	2.8
16	330	11.8	230	5.2	120	3.4	4.8	2.8
17	285	11.2	230	4.5	120	3.1	4.4	2.7
18	260	10.8			120	2.2	4.1	2.7
19	270	10.6					3.3	2.8
20	290	10.8					3.0	2.6
21	290	11.2					2.8	2.7
22	280	11.0					3.0	2.8
23	270	10.8						2.9

Time: 60.0°W.
Sweep: 1.2 Mc to 18.0 Mc, manual operation.

Table 12

Palmyra I. (5.9°N, 162.1°W) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	(10.1)					2.9	(3.0)
01	250	(9.2)					2.1	2.8
02	260	8.2					2.0	(2.8)
03	250	(8.4)					2.0	2.8
04	250	6.8					2.0	3.1
05	240	5.8					2.0	3.1
06	270	4.7			140	---	2.1	2.8
07	250	6.9			120	2.8	3.5	2.8
08	240	8.3			120	3.2	3.8	2.6
09	240	8.7	220	---	120	3.6	3.8	2.4
10	250	9.1	215	---	120	3.8	3.2	2.3
11	320	9.4	220	---	130	4.1		2.2
12	360	9.9	230	5.5	130	4.2		2.2
13	360	10.0	230	5.3	130	---		2.2
14	350	10.4	225	5.2	130	4.0		2.3
15	300	10.8	220	5.2	120	2.8	4.2	2.2
16	250	11.0	230	---	120	2.5	4.3	2.3
17	240	10.9	---	---	120	3.0	4.0	2.3
18	280	10.7			130	2.3	3.7	2.3
19	340	10.0					3.8	2.3
20	380	9.3					2.8	2.2
21	370	9.4					2.1	2.2
22	330	(9.8)					2.3	(2.4)
23	290	(11.0)					3.1	(2.8)

Time: 157.5°W.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 3[illegible] seconds, automatic operation; 13.0 Mc to 18.0 Mc, manual operation.

Table 13

Huancayo, Peru (12.0°S, 75.3°W) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	7.3					2.7	3.1
01	220	6.8					2.7	3.1
02	230	6.5					2.7	3.2
03	230	5.6					2.7	3.2
04	240	4.6					2.7	3.1
05	250	3.9					2.8	3.1
06	290	4.4				1.3	2.8	2.9
07	240	7.2				2.4	6.7	3.0
08	230	9.1				3.0	10.4	2.8
09	290	9.5	210	5.2		3.4	10.6	2.6
10	295	9.2	210	5.2		3.8	10.7	2.5
11	320	9.0	205	5.1		3.9	10.7	2.5
12	310	8.9	200	5.3		3.9	10.7	2.4
13	320	9.0	200	5.1		3.8	10.7	2.4
14	340	9.2	200	4.9		3.7	10.7	2.4
15	210	9.2				3.4	10.6	2.4
16	220	9.1				3.0	10.4	2.4
17	250	9.1				2.3	5.6	2.4
18	295	8.5				1.2	2.7	2.4
19	320	8.0						2.4
20	300	8.2						2.5
21	250	8.4						2.8
22	240	7.6						2.9
23	230	7.2					2.8	3.0

Time: 75.0°W.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 14

Oslo, Norway (60.0°N, 11.0°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.8						
01	300	6.4						
02	300	6.2						
03	305	6.2	300	---	---	---		
04	340	6.4	250	---	140	1.9		
05	330	6.6	242	3.6	110	2.3		
06	355	6.5	240	4.3	110	2.7		
07	350	6.7	230	4.5	110	2.9		
08	370	6.8	225	4.8	100	3.1		
09	370	6.9	210	4.9	100	3.3		
10	400	6.9	210	5.1	100	3.4		
11	390	7.0	210	5.1	100	3.5		
12	400	6.7	210	5.2	100	3.5		
13	400	6.7	210	5.1	100	3.6		
14	400	6.4	202	5.2	100	3.5		
15	378	6.6	210	5.0	100	3.3		
16	360	6.6	210	4.9	105	3.2		
17	350	6.7	230	4.8	110	3.0		
18	320	6.7	235	---	110	2.8		
19	370	6.7	250	---	110	2.5		
20	260	6.8	---	---	130	2.1		
21	270	6.9			150	---		
22	270	7.0						
23	270	7.0						

Time: 15.0°E.
Sweep: 1.5 Mc to 10.0 Mc in 5 minutes, automatic operation.

Table 15

Okinawa I. (26.3°N, 127.7°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		9.4						2.7
01		9.4						2.9
02		9.0						3.0
03		8.4						3.0
04		7.8						2.9
05		7.3						2.9
06		7.4						3.0
07		8.0					4.1	3.1
08		8.1		---			4.4	3.0
09		8.5					5.2	2.9
10		9.1		---			6.0	2.7
11		9.8		5.7			5.9	2.6
12		10.5		(5.8)			6.6	2.6
13		11.5		5.8			5.6	2.7
14		11.6		(5.4)			5.0	2.7
15		11.9		5.4			5.6	2.7
16		12.5		---			5.6	2.8
17		12.8					5.8	2.9
18		12.6					5.4	2.9
19		11.3					4.3	2.9
20		10.2					4.4	2.8
21		9.3					3.8	2.7
22		10.0						2.6
23		9.8						2.7

Time: 135.0°E.
Sweep: 3.2 Mc to 18.0 Mc in 15 minutes, manual operation.

Table 16

Johannesburg, Union of S.Africa (26.2°S, 28.0°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(260)	2.8					1.8	2.8
01	(280)	2.8					1.8	2.8
02	(260)	2.9					3.6	2.8
03	(265)	2.9					2.0	2.8
04	(250)	2.9					2.8	2.9
05	(260)	2.7					3.6	2.9
06	(250)	2.7						2.9
07	230	5.8			---	(1.8)		3.3
08	220	8.0	220	---	120	2.6		3.3
09	240	9.1	220	---	110	3.1		3.3
10	250	9.9	210	4.8	110	3.4		3.2
11	260	9.8	210	4.5	110	3.5	3.7	3.1
12	260	10.1	220	---	110	(3.6)	3.8	3.1
13	250	9.8	220	---	110	3.6	4.1	3.0
14	260	9.6	220	4.5	110	3.4	4.0	3.1
15	250	9.6	220	---	110	3.1	3.8	3.0
16	240	9.7	220	---	110	2.7	3.2	3.1
17	230	9.0			100	2.1	2.5	3.2
18	210	6.7					2.0	3.3
19	(220)	4.4					2.0	3.3
20	240	3.7					2.0	3.2
21	245	3.1					1.6	3.1
22	240	3.1					1.6	3.1
23	(250)	2.9					1.6	2.9

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 17

Oslo, Norway (60.0°N, 11.0°E) May 1949

Tims	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.6						
01	300	6.0						
02	300	5.0						
03	300	5.9	---	---				
04	280	5.8	---	---	140	1.7		
05	260	6.0	260	---	130	2.2		
06	350	6.2	250	4.0	110	2.6		
07	350	7.0	240	4.5	110	2.8		
08	350	7.3	220	4.7	110	3.1		
09	350	7.4	220	5.0	110	3.2		
10	350	7.8	220	5.2	100	3.4		
11	360	8.1	210	5.3	100	3.5		
12	380	8.2	210	5.3	100	3.5		
13	350	7.8	210	5.3	100	3.5		
14	370	7.7	210	5.2	100	3.5		
15	340	7.5	210	5.1	100	3.4		
16	330	7.7	225	4.8	100	3.2		
17	250	7.8	230	---	110	3.0		
18	240	7.8	---	---	110	2.7		
19	250	7.8	---	---	120	2.3		
20	260	7.8	---	---	130	1.7		
21	260	7.6			---	---		
22	270	7.1						
23	280	6.9						

Time: 15.0°E.
Sweep: 1.6 Mc to 10.0 Mc in 5 minutes.

Tabls 18

Wakkanai, Japan (45.4°N, 141.7°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.3					2.6	2.7
01	300	7.2						2.5
02	300	7.0						2.5
03	300	5.7						2.5
04	300	5.9						2.5
05	290	8.0	270	---	110	2.1	2.5	2.8
05	280	8.9	260	---	110	2.7	3.2	2.8
07	300	9.2	250	4.8	100	3.2	4.4	2.8
08	300	8.8	235	---	100	3.4	4.9	2.8
09	300	8.8	230	---	100	3.5	5.2	2.8
10	350	8.5	220	5.5	100	3.5	5.0	2.7
11	370	9.2	215	5.4	100	3.5	5.0	2.5
12	380	9.8	210	5.2	100	3.5	5.4	2.7
13	350	9.7	220	5.4	100	3.6	5.2	2.7
14	340	9.3	220	5.3	100	3.5	5.4	2.7
15	340	9.2	230	---	100	3.5	5.2	2.8
16	300	9.0	230	---	100	3.2	4.5	2.8
17	295	8.5	240	---	110	2.7	4.1	2.9
18	290	8.2	250	---	110	2.3	3.5	2.8
19	280	8.0	---	---	---	1.7	3.4	2.9
20	280	7.8					2.9	2.8
21	295	7.6					3.4	2.7
22	300	7.7					2.8	2.7
23	300	7.5					2.8	2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Tabls 19

Fukaura, Japan (40.6°N, 139.9°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	8.1					3.0	2.6
01	300	8.0					3.0	2.7
02	300	7.9					2.8	2.7
03	300	7.5					2.7	2.7
04	300	7.3					2.4	2.5
05	270	8.5	255	---	120	2.1	2.8	2.8
06	260	9.6	250	---	110	2.5	3.3	2.9
07	265	10.2	240	---	110	3.2	4.5	3.0
08	290	10.0	240	---	110	3.4	4.8	2.9
09	290	9.8	230	---	110	3.5	5.2	2.7
10	350	9.8	240	---	110	3.8	5.4	2.7
11	350	10.3	---	---	110	---	6.0	2.7
12	350	10.2	270	5.5	110	---	5.8	2.7
13	360	10.4	220	5.5	---	---	5.5	2.7
14	350	10.0	230	5.0	110	---	5.8	2.7
15	315	10.7	240	5.0	110	3.5	5.5	2.8
16	300	10.3	230	---	110	3.2	5.2	2.8
17	290	9.8	250	---	110	2.9	4.8	2.9
18	270	9.5	---	---	120	2.2	3.9	2.8
19	270	9.3	---	---	---	---	4.5	2.8
20	280	8.5					5.0	2.8
21	300	8.2					3.7	2.7
22	300	8.3					4.0	2.7
23	300	8.3					3.6	2.5

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Tabls 20

Shibata, Japan (37.9°N, 139.3°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	8.6					3.8	2.6
01	300	8.2					3.2	2.7
02	280	7.9					3.0	2.7
03	290	7.6					2.8	2.7
04	285	7.4					2.7	2.6
05	255	8.5	---	---	110	1.9	3.0	2.9
06	240	9.5	230	---	110	2.7	3.9	2.9
07	250	10.3	230	---	100	3.1	5.2	3.0
08	270	10.1	230	---	100	3.4	5.8	2.9
09	290	9.9	220	5.3	100	3.6	5.8	2.7
10	330	10.4	215	5.5	100	3.8	5.8	2.7
11	345	10.5	210	5.8	100	3.7	5.0	2.7
12	340	11.0	215	5.7	100	3.8	6.1	2.7
13	330	11.2	210	5.6	100	3.8	5.5	2.7
14	340	10.9	220	5.4	100	3.7	5.2	2.7
15	320	11.4	225	5.0	100	3.6	4.8	2.8
16	300	10.8	230	4.6	100	3.3	5.8	2.8
17	290	10.3	230	---	100	2.9	5.2	2.9
18	270	10.1	---	---	110	2.2	5.2	2.9
19	250	9.5	---	---	---	---	5.5	2.9
20	270	9.0					5.5	2.7
21	300	8.6					5.4	2.5
22	300	8.8					4.3	2.7
23	300	8.8					4.0	2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mo in 15 minutes, manual operation.

Table 21

Tokyo, Japan (35.7°N, 139.5°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	285	8.8					3.8	2.8
01	280	8.5					4.0	2.8
02	260	8.0					3.8	2.8
03	270	7.8					3.0	2.8
04	260	7.7	---	---			2.4	2.8
05	250	8.4	230	---	100	1.8	2.8	3.0
06	230	9.7	220	---	100	2.6	3.4	3.1
07	240	10.2	230	---	100	3.2	4.8	3.1
08	250	9.8	220	5.0	100	3.5	5.9	3.0
09	300	9.9	210	5.8	100	3.6	6.4	2.8
10	310	10.5	205	5.8	100	3.8	6.5	2.8
11	315	11.1	200	5.8	100	3.9	5.7	2.8
12	320	11.5	220	5.8	100	3.9	6.3	2.8
13	320	11.5	230	5.7	100	3.8	6.0	2.8
14	315	12.0	220	5.6	100	3.7	6.2	2.8
15	300	12.0	215	5.4	100	3.8	5.8	2.9
16	280	11.4	220	5.0	100	3.4	5.9	3.0
17	260	11.0	225	---	100	2.9	5.7	3.0
18	240	10.5	---	---	100	2.1	5.2	3.0
19	240	9.6	---	---	---	---	4.8	3.1
20	250	8.7					6.2	2.9
21	275	8.7					5.2	2.8
22	300	8.8					5.8	2.8
23	280	8.9					3.8	2.8

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 22

Yamakawa, Japan (31.2°N, 130.6°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	10.0					3.6	2.7
01	300	10.0					3.6	2.7
02	295	9.1					3.4	2.8
03	280	8.5					3.6	2.8
04	280	8.2					2.7	2.8
05	280	8.1					2.7	2.8
06	260	9.2	250	---	125	2.0	3.0	3.0
07	250	9.4	245	---	110	2.7	3.7	3.0
08	250	9.5	250	---	110	3.1	5.0	2.9
09	300	9.7	230	---	110	3.4	5.9	2.7
10	330	10.5	245	---	110	3.6	6.5	2.6
11	360	10.9	235	---	110	(3.7)	6.4	2.6
12	350	11.7	240	---	110	---	6.3	2.6
13	350	12.2	250	---	110	4.1	5.6	2.6
14	350	13.0	245	5.2	110	3.8	5.2	2.7
15	350	13.0	240	---	110	3.6	5.8	2.7
16	330	12.6	245	---	110	3.6	5.2	2.8
17	300	12.0	240	---	110	3.2	5.0	2.8
18	290	11.3	250	---	110	2.5	4.6	2.8
19	270	10.9			110	2.1	4.6	2.8
20	280	10.1					4.8	2.7
21	290	9.8					4.6	2.6
22	305	9.8					4.4	2.6
23	305	9.8					4.2	2.6

Time: 135.0°E.
Sweep: 1.2 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 23

Okinawa I. (26.3°N, 127.7°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		13.9						2.8
01		12.7						2.9
02		10.2						3.0
03		9.8						3.0
04		9.2						3.0
05		8.8						3.0
06		8.6						3.0
07		9.2				E	3.6	3.1
08		9.3		---		---	4.6	2.9
09		10.0		---		---	5.4	2.7
10		11.2		---		---	5.9	2.6
11		12.3		---		---	5.4	2.6
12		12.9		---		---	5.7	2.7
13		13.6		6.0		---	5.7	2.7
14		14.7		(5.6)		---	5.6	2.8
15		14.9		---		---	4.8	2.8
16		14.6				---	4.6	2.8
17		14.6				---	4.6	2.8
18		14.8				E	4.4	2.8
19		14.4					4.0	2.8
20		13.0					4.4	2.8
21		13.4					3.7	2.7
22		13.8						2.8
23		13.8					3.8	2.8

Time: 135.0°E.
Sweep: 3.2 Mc to 18.0 Mc in 15 minutes, manual operation.

Table 24

Brisbane, Australia (27.5°S, 153.0°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	5.0					2.0	2.8
01	260	5.0					2.0	2.8
02	270	5.2					2.0	2.8
03	260	5.1					2.0	2.9
04	240	4.6					2.1	2.9
05	240	4.3					2.0	2.9
06	240	4.8			---	<1.5		3.0
07	230	7.9			120	2.4		3.3
08	240	10.1			110	3.0		3.2
09	240	11.5	230	5.0	100	3.3		3.2
10	250	12.0	225	5.0	110	3.5		3.2
11	250	11.6	215	5.0	100	3.6		3.0
12	250	12.0	220	5.0	100	3.6		3.0
13	250	12.0	220	5.0	110	3.5	4.0	3.0
14	250	11.9	220	4.5	100	3.5	4.0	3.0
15	240	11.6	220	4.0	100	3.2	3.1	3.0
16	230	10.9			100	2.7		3.0
17	230	10.0			150	1.8	2.5	3.0
18	220	9.0			---	<1.5	3.6	3.0
19	240	7.6					3.0	2.9
20	245	6.7					2.0	2.9
21	245	6.0					2.0	2.9
22	250	5.5					2.0	2.8
23	250	5.3					1.9	2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 25

Canberra, Australia (36.3°S, 149.0°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.5					2.6	2.7
01	270	4.6					3.2	2.7
02	260	4.6					3.3	2.7
03	260	4.8					3.0	2.8
04	240	4.8					2.6	2.9
05	215	4.2					2.6	3.0
06	235	3.8			---	<1.1	2.5	3.0
07	220	6.2			150	1.9	3.3	3.1
08	220	9.0	---	---	100	2.6	3.5	3.3
09	220	10.2	---	---	100	3.0	3.5	3.2
10	230	11.5	215	4.4	100	3.3	3.9	3.2
11	230	11.6	210	4.6	100	3.5	4.2	3.1
12	220	11.3	206	4.5	100	3.5	4.1	3.0
13	240	11.6	210	4.4	100	3.5	4.2	3.0
14	240	11.8	210	4.6	100	3.4	4.0	3.0
15	228	11.5	210	4.0	100	3.0	3.8	3.0
16	225	11.1	---	---	100	2.5	3.8	3.0
17	210	10.3			150	1.8	3.5	3.0
18	210	8.4			---	<1.5	3.5	3.0
19	220	7.5					3.4	3.0
20	220	6.4					2.9	2.9
21	240	5.2					2.6	2.9
22	250	4.8					2.8	2.8
23	250	4.6					2.6	2.7

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 65 seconds.

Table 26

Hobart, Tasmania (42.8°S, 147.4°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.0					2.6	2.7
01	290	4.2					3.0	2.6
02	280	4.0					2.5	2.7
03	270	3.9					3.0	2.8
04	255	3.8					2.2	2.8
05	240	3.8					2.1	2.9
06	240	3.4					2.6	3.0
07	250	4.4			---	E	3.0	3.1
08	240	7.4			110	2.2	2.1	3.4
09	240	9.6			---	2.8	4.0	3.4
10	240	10.2			100	3.0	3.7	3.4
11	240	(9.4)			100	3.2	2.1	(3.2)
12	240	---			100	3.3	3.2	---
13	240	(10.6)			---	3.3	3.1	(3.2)
14	240	(10.2)			100	3.0	3.5	(3.2)
15	240	(10.4)			---	2.8	3.3	(3.0)
16	230	(10.4)			---	2.3	3.2	(3.2)
17	230	10.0			---	E	2.8	3.3
18	240	(9.0)					2.1	(3.2)
19	240	7.0					2.1	3.3
20	230	6.0					2.0	3.1
21	240	6.3					2.7	3.0
22	250	(4.8)					2.8	(2.8)
23	265	4.0					2.4	2.6

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 27

Christchurch, New Zealand (43.5°S, 172.7°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.9					3.0	2.7
01	300	4.8					3.2	2.6
02	300	4.8					3.5	2.6
03	295	4.7					3.5	2.7
04	280	4.5					3.5	2.8
05	260	4.2					3.7	2.9
06	250	3.6					3.5	2.9
07	250	5.0				(1.3)	3.2	3.1
08	230	8.3				1.8	4.3	3.2
09	230	9.9	---	---		2.6	4.4	3.2
10	230	10.7	---	---		2.9	4.4	3.2
11	240	11.3	230	4.5		3.2	5.1	3.1
12	230	11.8	---	---		3.2	5.2	3.0
13	240	12.0	---	---		3.2	6.0	3.0
14	240	11.8	---	---		3.0	4.5	3.0
16	240	11.7				2.6	4.4	3.0
16	230	11.3				2.3	4.4	3.0
17	230	9.6				1.5	3.8	3.0
18	230	8.0					4.2	2.9
19	250	7.3					3.8	2.9
20	250	6.2					3.5	2.8
21	260	5.7					3.0	2.8
22	270	5.2					3.3	2.7
23	280	5.0					3.0	2.6

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc.

Table 28

Poitiers, France (46.6°N, 2.0°W) April 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	8.0						2.5
01	330	7.6						2.5
02	320	7.2						2.5
03	315	6.8						2.5
04	310	6.4						2.5
05	290	6.5	---	---				2.6
06	270	7.4	236	---	---	---		2.9
07	270	8.0	230	---	110	3.3		3.0
08	255	9.0	225	---	120	3.3	3.5	2.9
09	260	9.5	220	5.4	110	3.4	3.7	2.8
10	275	10.0	210	5.8	105	3.4	3.7	2.7
11	330	10.5	210	6.4	100	3.4	3.8	2.7
12	330	11.0	215	6.4	100	3.4	3.8	2.6
13	330	11.3	210	6.3	100	3.4	3.7	2.6
14	320	D	220	6.1	105	3.3	3.6	2.6
15	285	(11.0)	228	6.9	110	3.4		2.7
16	270	(10.8)	230	---	120	3.3		2.7
17	272	(10.6)	235	---	120	3.3		2.8
18	260	10.6	240	---	---	---		2.8
19	248	10.4	---	---	---	---		2.9
20	250	9.3			---	---		2.8
21	260	8.8						2.6
22	290	8.4						2.6
23	300	8.2						2.6

Time: 0.0°.
Sweep: 3.1 Mc to 11.8 Mc in 1 minute 15 seconds.

Table 29

Delhi, India (28.6°N, 77.1°E) April 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	10.5						
01	340	10.1						
02	---	---						
03	---	---						
04	---	---						
05	340	7.5						
06	335	9.1						
07	340	11.2						
08	340	11.8						
09	360	12.4						
10	400	13.0						
11	360	(13.5)						
12	---	(14.2)						
13	---	(14.1)						
14	---	(14.2)						
15	---	(14.2)						
16	---	(13.9)						
17	---	(13.9)						
18	---	(13.8)						
19	---	(12.9)						
20	360	(12.5)						
21	380	11.9						
22	400	11.7						
23	350	11.3						

Time: Local.
Sweep: 1.6 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 30

Bombay, India (19.0°N, 73.0°E) April 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	330	10.1						
08	---	---						
09	420	12.6						
10	480	(13.5)						
11	---	(14.1)						
12	---	(14.3)						
13	---	---						
14	---	(14.4)						
15	---	(14.7)						
16	---	(14.9)						
17	---	(15.1)						
18	---	(15.1)						
19	---	(14.9)						
20	480	(14.7)						
21	---	(14.8)						
22	---	---						
23	---	---						

Time: Local.
Sweep: 1.6 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 31

Madras, India (13.0°N, 80.2°E) April 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	** (M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	420	10.4						
08	480	11.2						3.2
09	540	12.3						
10	540	12.6						
11	600	12.9						
12	600	13.2						3.2
13	600	13.4						
14	600	13.8						
15	600	13.9						
16	600	(13.9)						3.2
17	600	(13.9)						
18	600	(13.6)						
19	600	(13.0)						
20	600	(13.0)						3.2
21	---	(11.9)						
22	---	(11.5)						
23								

Time: Local.
Sweep: 1.6 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 32

Tiruchirapalli, India (10.8°N, 78.8°E) April 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	360	8.6						
07	360	10.0						
08	420	12.2						
09	540	12.7						
10	570	13.0						
11	600	11.7						
12	600	12.0						
13	600	12.0						
14	600	12.6						
15	600	13.8						
16	570	13.5						
17	555	13.4						
18	600	12.8						
19	660	12.0						
20	720	12.0						
21	660	12.0						
22	680	12.1						
23	---	---						

Time: Local.
Sweep: 1.6 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 23

Fribourg, Germany (48.1°N, 7.8°E) — March 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	(6.8)						(2.6)
01	295	6.6						(2.7)
02	290	(6.4)						(2.6)
03	300	6.0						(2.7)
04	296	5.6						2.6
05	280	5.2						2.7
06	270	5.8	---	---	---	E		(2.9)
07	240	(8.0)	---	---	120	2.1		(3.1)
08	230	10.1	230	3.3	111	2.7	2.6	3.0
09	230	11.3	222	4.0	110	3.1	3.4	3.0
10	240	12.0	216	4.4	106	3.4	4.1	3.0
11	240	(12.3)	230	4.2	110	(3.6)	4.0	(3.0)
12	230	(12.6)	222	(4.2)	110	3.7	4.0	(2.9)
13	240	(12.4)	220	4.5	110	3.6		(2.9)
14	235	(12.0)	230	---	110	3.5	1.7	(2.9)
15	235	11.6	230	---	108	3.2	3.0	(2.9)
16	240	11.7	---	---	110	2.9	1.7	(2.9)
17	240	(11.2)			110	2.4	3.1	(3.0)
18	240	10.8			---	E	3.0	(2.9)
19	230	(9.1)					2.4	(3.0)
20	240	(8.5)						(2.6)
21	250	(7.9)						(2.8)
22	260	(7.3)						(2.7)
23	290	(7.0)						(2.7)

Time: Local.
Sweep: 1.6 Mc to 17.6 Mc in 10 minutes, automatic operation.

Table 24

Poitiers, France (46.6°N, 2.0°W) — March 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02	305	6.6						2.6
03	300	6.6						2.6
04	290	6.0						2.6
06	290	5.4						2.6
06	280	5.6						2.8
07	250	8.0	230	---				3.0
08	240	9.8	230	---	105	3.3	3.4	3.1
09	240	(11.0)	220	---	120	3.3	3.4	2.9
10	240	D	220	---	110	3.4	3.4	(3.0)
11	240	D	220	---	110	3.4	3.6	---
12	250	D	220	---	110	3.4	3.6	---
13	250	D	230	---	110	3.4	3.6	---
14	250	D	225	---	120	3.4	3.5	(2.8)
15	250	D	230	---	120	3.4	3.4	(2.9)
16	255	D	230	---	---	---	3.4	(3.0)
17	260	(11.0)	235	---	---	---	3.5	(3.0)
18	250	10.0	230	---			3.4	3.0
19	240	9.5					(3.3)	2.6
20	255	8.8					(3.2)	2.8
21	262	8.1						2.7
22	288	7.6						2.6
23	290	7.5						2.6

Time: 0.0°.
Sweep: 3.1 Mc to 11.8 Mc in 1 minute 15 seconds.

Table 35

Fribourg, Germany (48.1°N, 7.6°E) — February 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	288	(5.6)						2.8
01	295	5.3					1.9	2.7
02	295	5.1						2.6
03	305	4.6						(2.7)
04	300	4.6						2.7
05	276	4.0						2.6
06	272	3.9						2.6
07	250	6.0			---	E		2.9
06	230	9.4	---	---	120	2.0		3.2
09	220	(11.6)	---	---	112	2.8	3.0	3.3
10	225	12.1	---	---	110	3.2	3.6	3.2
11	225	12.4	225	---	110	3.3	3.4	(3.2)
12	225	12.4	222	---	110	3.4		3.0
13	220	12.4	220	---	110	3.3		3.0
14	225	12.0	---	---	105	3.3		(3.1)
15	225	(11.9)	---	---	108	3.0	3.0	(3.1)
16	230	11.7			112	2.6	3.1	(3.1)
17	220	11.1			---	1.7	2.6	(3.1)
16	220	9.8					3.0	3.0
19	225	8.4					2.2	(3.0)
20	238	(7.3)					2.4	(3.0)
21	248	6.6					2.2	(3.0)
22	255	6.3						2.8
23	270	5.8						2.9

Time: Local.
Sweep: 1.6 Mc to 17.6 Mc in 10 minutes, automatic operation.

Table 36

Poitiers, France (46.6°N, 2.0°W) — February 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02	---	5.4						2.6
03	---	5.2						2.6
04	---	(4.7)						2.6
05	---	(4.2)						(2.7)
06	---	(4.0)						(2.6)
07	270	6.4	---					3.0
08	230	9.6	220					3.3
09	230	D	220					(3.1)
10	230	D	220		---	---	3.4	(3.1)
11	230	D	230		---	---	3.5	---
12	230	D	220		125	3.4	3.6	---
13	230	D	215		130	3.4	3.6	---
14	230	D	220		120	3.4	3.5	(3.0)
16	235	D	230		---	---	3.4	---
16	230	D	230				3.7	---
17	240	(10.2)	230				3.4	3.1
18	230	9.5	---				3.8	3.0
19	240	8.8						3.0
20	250	7.6						2.9
21	260	7.1						2.8
22	280	6.4						2.8
23	280	6.2						2.8

Time: 0.0°.
Sweep: 3.1 Mc to 11.8 Mc io 1 minute 16 seconds.

Table 37

Wakkanai, Japan (45.4°N, 141.7°E) February 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	5.1						2.8
01	280	5.2						2.8
02	290	5.0						2.7
03	270	4.9						2.8
04	250	4.7						2.9
05	260	4.8						2.8
06	230	5.0			---	E		3.0
07	(230)	(8.7)	---	---	---	2.0		(3.1)
08	215	11.6	---	---	100	2.8		3.2
09	210	12.3	---	---	100	3.2		3.2
10	220	12.8	---	---	100	3.4		(3.2)
11	220	12.4	210	---	100	3.7		3.2
12	230	12.4	---	---	100	3.5	(3.6)	3.1
13	(240)	(12.0)	---	---	(100)	(3.5)		(3.1)
14	220	11.7	---	---	100	3.4		3.0
15	220	11.2	---	---	100	3.2		3.0
16	220	10.3	---	---	100	2.5		3.1
17	220	9.6	---	---	100	1.8	1.5	3.1
18	210	8.3	---	---	---	E	1.6	3.1
19	210	7.2						3.2
20	210	6.4						3.0
21	230	6.2						3.0
22	240	5.6						2.9
23	260	5.3						2.9

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 38

Fukaura, Japan (40.6°N, 139.9°E) February 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.4					1.6	2.6
01	300	5.2					1.9	2.7
02	300	5.1					3.2	2.6
03	390	5.1						2.6
04	280	5.0						2.8
05	270	4.9						2.7
06	275	5.0			---	E		2.9
07	235	8.2	---	---	115	2.0		3.2
08	225	10.0	---	---	110	2.6		3.2
09	230	11.7	---	---	110	3.1	3.1	3.2
10	230	11.9	---	---	110	3.3	(3.6)	3.2
11	230	12.0	---	---	110	3.5	(4.3)	3.0
12	240	12.0	---	---	(110)	---		3.0
13	240	11.6	---	---	110	3.4	3.8	2.9
14	245	11.2	230	---	110	3.4		2.9
15	250	11.2	230	---	110	3.0	3.1	3.0
16	240	10.6	---	---	110	2.6	2.8	3.0
17	230	10.0	---	---	120	2.0	2.2	3.0
18	230	8.7	---	---	---	E	2.5	2.9
19	240	8.0						3.0
20	240	7.4					3.2	2.9
21	250	6.6					2.0	2.8
22	370	6.1						2.8
23	290	5.6						2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 39

Shibata, Japan (37.9°N, 139.3°E) February 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	5.5					2.4	2.7
01	270	5.6					3.1	2.8
02	285	5.2					2.5	2.7
03	270	5.1					2.4	2.8
04	260	4.9					2.3	2.7
05	270	4.6					1.5	2.8
06	250	4.8			---	E	2.2	2.9
07	220	8.4	---	---	130	2.1	2.3	3.2
08	210	10.9	---	---	100	2.8		3.4
09	220	12.2	---	---	100	3.3	4.0	3.2
10	230	12.8	220	---	100	3.6	3.8	3.1
11	230	13.4	215	---	100	3.7	4.0	3.0
12	230	13.2	220	---	100	3.8	3.9	3.0
13	230	12.5	210	---	100	3.7		2.9
14	230	12.2	210	---	100	3.6		2.9
15	220	11.9	220	---	100	3.3	3.9	2.9
16	230	11.2	---	---	100	2.8	3.4	3.0
17	220	10.4	---	---	105	2.2	2.6	3.1
18	220	9.0	---	---	---	1.4	2.8	3.0
19	220	8.4					2.4	3.0
20	230	7.8					2.4	3.1
21	230	6.7					2.3	3.0
22	250	6.1						2.9
23	270	5.7						2.8

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 40

Tokyo, Japan (35.7°N, 139.5°E) February 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	5.8					1.8	2.9
01	250	5.6					1.7	2.9
02	250	5.5					2.0	2.9
03	240	5.0					1.8	2.9
04	230	4.8					1.6	2.9
05	245	4.4					1.8	2.8
06	250	4.7			---	1.2	1.9	3.0
07	220	8.4	210	---	120	2.2		3.4
08	220	11.1	210	---	100	2.8	2.8	3.4
09	210	12.5	210	---	100	3.2	3.6	3.3
10	220	13.0	205	---	100	3.5		3.3
11	225	13.5	210	---	100	3.7	4.0	3.0
12	230	13.5	205	---	100	4.0	4.2	3.1
13	230	12.9	200	---	100	3.8	4.2	3.0
14	240	12.7	210	---	100	3.7	3.9	3.0
15	220	12.2	220	---	100	3.4	3.6	3.0
16	220	11.6	210	---	100	2.9	3.2	3.0
17	215	11.0	200	---	100	2.2		3.1
18	210	9.5			---	1.4	2.4	3.2
19	215	8.8					1.8	3.1
20	220	8.0						3.2
21	220	7.2						3.1
22	230	6.5						3.0
23	240	6.1						3.0

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 41

Yamakawa, Japan (31.2°N, 130.6°E) February 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.7						2.8
01	280	6.5						2.8
02	280	6.2						2.8
03	285	5.6						2.9
04	250	4.8						3.1
05	280	4.2						2.7
06	300	4.1			---	E		2.7
07	270	6.4	240	---	175	1.8		3.0
08	240	9.9	---	---	110	2.6		3.3
09	240	11.8	230	---	110	3.1	3.4	3.2
10	250	12.8	230	---	110	3.4	3.9	3.0
11	250	13.3	230	---	110	3.6	4.2	3.0
12	290	13.6	220	---	110	3.7	4.6	2.9
13	300	14.3	220	---	110	3.8	4.4	2.8
14	300	13.8	230	---	110	3.8	4.2	2.9
15	300	13.9	220	---	110	3.5	3.8	2.8
16	290	13.6	230	---	110	3.3	3.6	2.8
17	270	13.2	240	---	110	2.7	2.4	2.8
18	250	12.4	---	---	100	2.0		2.9
19	230	11.5					2.2	2.9
20	240	10.4						3.0
21	240	9.7						3.0
22	230	8.3						3.0
23	250	7.6						2.9

Time: 135.0°E.
Sweep: 1.2 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 42

Fribourg, Germany (48.1°N, 7.8°E) January 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	3.3					2.0	2.6
01	320	3.3					2.0	2.6
02	320	3.2						(2.6)
03	315	3.2						2.7
04	300	3.0						2.8
05	285	(2.8)						2.8
06	290	2.7	---	---				2.8
07	250	3.4	---	---				2.9
08	225	(7.0)	---	---	---	1.8	2.5	3.4
09	225	(9.4)	---	---	120	2.3	3.2	(3.3)
10	230	10.6	---	---	115	2.7	3.3	3.3
11	230	(10.8)	---	---	116	3.0	3.3	3.2
12	230	10.6	---	---	119	3.0	3.3	3.2
13	230	10.4	230	---	124	3.0	3.2	3.2
14	240	10.8	---	---	120	2.9	3.2	3.1
15	230	10.0	---	---	120	2.6	3.2	3.2
16	220	9.0	---	---	125	1.9	3.2	3.3
17	215	7.8	---	---			3.1	3.2
18	220	(6.4)					2.5	(3.3)
19	238	(4.9)					2.5	3.2
20	255	3.8					2.6	3.0
21	282	3.4					2.4	2.8
22	320	3.3						2.6
23	335	3.2						2.6

Time: Local.
Sweep: 1.6 Mc to 17.6 Mc in 10 minutes, automatic operation.

Table 43

Poitiers, France (46.6°N, 2.0°W) January 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02	---	3.4						(2.7)
03	---	3.2						(2.8)
04	---	3.0						---
05	---	3.0						---
06	---	3.0						---
07	---	4.0						3.0
08	230	7.5						3.4
09	220	9.4						3.3
10	228	10.4					(3.6)	3.4
11	230	10.5					3.6	3.3
12	220	10.2					3.4	3.2
13	230	10.4					3.5	3.2
14	230	10.2					(3.5)	3.2
15	230	10.0					(4.9)	3.3
16	220	9.1						3.2
17	230	8.0					(4.7)	3.2
18	240	6.7					(4.7)	3.2
19	240	5.2					(4.7)	3.2
20	260	4.1					(4.7)	3.0
21	---	3.7					(4.8)	2.8
22	---	3.6						2.6
23	---	3.6						2.6

Time: 0.0°.
Sweep: 3.1 Mc to 11.8 Mc in 1 minute 15 seconds.

Table 44

Wakkanai, Japan (45.4°N, 141.7°E) January 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.4					2.4	2.7
01	300	3.2					2.1	2.7
02	300	3.2					2.4	2.8
03	290	3.2					2.4	2.7
04	290	3.0					1.5	2.9
05	275	3.4	---	---			2.3	2.9
06	260	3.2	---	---	---	E	(2.3)	3.0
07	220	5.2	---	---	110	1.6	1.8	(3.2)
08	210	(7.2)	---	---	---	2.4	(2.4)	(3.5)
09	200	(9.7)	---	---	100	2.6	(2.7)	(3.3)
10	205	10.6	---	---	---	---		(3.2)
11	220	11.0	---	---	---	---		3.3
12	220	10.1	---	---	---	---		3.4
13	230	10.0	---	---	---	---		3.2
14	220	9.9	---	---	---	---		3.3
15	220	9.7	---	---	---	---		3.2
16	210	8.0	---	---	---	2.0	2.4	3.4
17	210	6.8	---	---	---	1.4	2.4	3.2
18	210	6.0					2.0	3.3
19	210	4.5					1.7	3.3
20	225	3.6					1.9	3.1
21	280	3.2					1.6	2.9
22	295	3.3					1.8	2.8
23	290	3.4					1.7	2.8

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 45

Fukaura, Japan (40.6°N, 139.9°E) January 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	3.3					2.8	2.6
01	320	3.4					3.8	3.6
02	315	3.5					2.6	3.7
03	300	3.3					3.4	3.7
04	295	3.3					3.4	3.8
05	300	3.3					3.2	3.8
06	360	3.1			---	E	3.0	3.0
07	340	6.0			110	1.5	3.3	3.1
08	225	8.9	---	---	110	3.3	3.6	3.3
09	230	10.3	---	---	110	3.8	3.0	3.3
10	240	11.5	320	---	110	3.3	3.3	3.3
11	240	11.5	230	---	110	3.1	3.3	3.3
12	330	11.0	230	---	110	3.2	3.6	3.3
13	245	10.6	220	---	110	3.2	3.4	3.1
14	240	10.6	230	---	110	3.0	3.2	3.0
15	330	10.0	---	---	110	2.7	3.3	3.1
16	330	9.1	---	---	110	2.3	2.9	3.3
17	330	8.0			---	E	2.8	3.0
18	220	7.3					2.6	3.1
19	310	5.5					2.4	3.1
20	230	4.0					3.3	3.0
21	270	3.3					2.3	3.7
22	300	3.3					3.2	3.7
23	310	3.3					3.4	2.6

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 46

Shibata, Japan (37.9°N, 139.3°E) January 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	3.5					3.4	3.8
01	290	3.5					3.3	2.8
02	275	3.6					3.4	3.9
03	245	3.3					3.4	3.0
04	250	3.3					3.3	3.0
05	280	3.1					2.3	3.9
06	330	3.2					2.3	3.1
07	310	5.9	---	---	---	1.7	3.4	3.3
08	200	8.7	---	---	100	3.5	3.6	3.5
09	200	10.0	---	---	100	3.0	3.6	3.4
10	310	12.0	---	---	100	3.3	3.8	3.3
11	310	12.7	310	---	100	3.4	3.6	3.3
12	210	11.6	200	---	100	3.5	3.5	3.2
13	210	11.0	---	---	100	3.5		3.3
14	330	10.9	200	---	100	3.3	3.1	3.3
15	210	10.4	---	---	100	2.9	2.9	3.3
16	310	9.5	---	---	100	3.5	2.4	3.3
17	205	8.2			---	1.8	3.0	3.3
18	210	7.3			---	E	3.6	3.3
19	200	6.3					2.6	3.4
20	200	4.3					3.5	3.4
21	250	3.3					3.4	3.0
22	280	3.3					2.4	3.8
23	280	3.4					2.4	3.9

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 47

Tokyo, Japan (35.7°N, 139.5°E) January 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.5					1.8	3.8
01	290	3.5					1.8	3.8
02	290	3.5					1.8	3.9
03	370	3.3					3.3	3.0
04	350	3.3					1.6	3.8
05	395	3.1						3.7
06	345	3.3						3.0
07	320	6.5	---	---	160	1.9	3.0	3.4
08	210	8.7	---	---	100	3.6		3.5
09	220	10.7	310	---	100	3.0	3.3	3.4
10	230	12.3	220	---	100	3.5	4.0	3.3
11	230	12.3	210	---	100	3.6	4.0	3.3
12	230	11.6	220	---	100	3.6	3.6	3.3
13	330	11.4	310	---	100	3.6	4.0	3.1
14	230	11.4	215	---	100	3.4	3.6	3.1
15	230	10.9	210	---	100	3.0	3.4	3.1
16	320	9.6	310	---	100	2.6		3.3
17	210	8.3	300	---	110	1.9	2.8	3.3
18	310	7.5	---	---	---	E	2.8	3.3
19	310	6.8					2.4	3.4
20	210	4.8					3.4	3.4
21	330	3.8					3.3	3.1
22	360	3.6					3.3	3.9
23	380	3.6					1.8	3.8

Time: 135.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 48

Yamakawa, Japan (31.3°N, 130.6°E) January 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.0						3.7
01	300	3.7						2.7
02	300	3.7						3.8
03	290	3.8						2.9
04	280	3.4						3.0
05	330	2.8						3.5
06	315	3.0			---	E		3.7
07	270	4.6	---	---	---	E		2.9
08	330	8.3	320	---	110	3.3		3.3
09	330	10.0	325	---	110	2.8		3.3
10	230	10.9	230	---	110	3.3	3.6	3.3
11	250	11.8	325	---	110	3.6	4.5	3.3
12	270	13.0	220	---	110	4.0	4.4	3.0
13	265	12.4	330	---	---	---	4.3	3.0
14	280	12.5	220	---	100	---	4.3	2.9
15	290	13.3	225	---	100	3.3	4.0	2.9
16	250	13.0	230	---	110	3.0	3.2	3.0
17	230	10.7	220	---	110	3.4	2.8	3.1
18	315	9.0	---	---	---	1.6	2.4	3.3
19	320	8.7					3.6	3.3
20	210	8.0						3.3
21	310	6.4						3.1
22	330	4.7						3.0
23	300	4.4						3.8

Time: 135.0°E.
Sweep: 1.3 Mc to 18.5 Mc in 15 minutes, manual operation.

Form adopted June 1946

TABLE 49

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D C

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), August (Month), 1949

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.J.S., B.E.B.

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	270	280	270	270	250	240	250	250	320	300	330	330	330	320	340	320	300	200	230	220	200	250	320
2	270	280	300	260	300	300	380	380	480	[440]L	(400)S	420	350	[350]C	[350]C	350	380	340	(300)S	270K	250K	270K	270K	330K
3	330K	320K	320K	480K	380K	350K	300K	320K	G K	G K	G K	G K	*G K	*G K	*A K	*G K	*650K	*470K	*380K	*280K	*280K	*260K	*320FK	*380K
4	*500K	*410K	*450K	*[440]AK	*400K	*400K	*290K	*240	*320F	*330	*300	*370	*300	340	390	330	370	310	280	240	250	260	250	250
5	280	280	280	250	300	300	280	200	[280]L	350	[370]A	380	400	350	360	320	330	300	280	250	250	250	250	250
6	270	270	270	270	300	300	300	330	520	380	370	300	360	370	330	330	310	300	(260)G	250	250	240	250	270
7	260	260	250	260	260	280	280	450K	350K	400K	400K	420K	450K	450K	400K	350K	380K	380K	320K	280K	270K	290K	300K	310K
8	350K	320K	330FK	300K	310K	300K	250K	380K	520FK	370K	400K	390K	340K	360K	[370]AK	380K	370K	330K	300K	260K	260K	[280]AK	300K	280K
9	280K	310K	300K	280K	280K	[270]AK	260K	[300]AK	330	330	320	360	380	330	330	360	320	300	280	250	240	250K	250K	260K
10	280K	280K	270K	270K	280K	300K	250K	350K	450K	450K	480K	G K	450K	440K	500K	400K	380K	370K	350K	280	250	250	250	250
11	250	280	250	280	280	270	250	280	280	300	280	320	330	310	300	300	290	280	280	250	250	250	250	250
12	280	250	260	260	(270)S	240	250	320	290	280	280	290	300	320	320	310	320	300	270	250	250	240	250	260
13	320	280	250	240	250	270	280	320	320	320	330	350	330	340	350	330	320	310	280	260	250	270	290	280
14	280	270	270	290	300	280	290	350	400	430	350	350	330	410	360	320	350	330	310K	280K	250K	250K	240K	280K
15	300K	350K	300K	290K	260K	250K	330K	350K	G K	G K	G K	G K	*550K	(*310)FK	550K	470K	470FK	400K	280K	280K	260K	*270K	*260K	*(290)AK
16	*300K	*(340)AK	*(310)AK	*[325]AK	*330K	*320K	*250K	*430K	490K	500K	480K	450K	550K	460K	430K	370K	360K	340K	300K	260K	250K	280K	310K	300
17	330	330	300	280	260	250	250	260	290	300H	340	350	350	340	350	350	*340	*310	280	250	250	250	280	250
18	310	[320]A	320	330	330	300	300	350K	360K	450K	A K	G K	510K	480K	480K	420K	380K	420K	300K	250K	250K	270	260	280
19	280	280	290	290	280	260	250	280	330	440	420	380	410	440	370	350	350	340	300	260	250	290	[270]A	250
20	300	310	300	300	270	280	280	350	340	320	330	310	350	350	340	340	350	[300]L	250	240	240	250	250	290
21	290	290	270	270	250	260	250	L	L	L	330	340	340	360	350	330	310	280	260	260	250	260	280	280
22	280	300	300	290	320	270	270	280	350	350	330	380	360	380	380	370	350	[310]L	270	250	230	250	250	270
23	260	250	270	270	280	270	260	280	270	290	300	[310]L	320	330	330	330	320	[310]L	280	250	240	250	260	270
24	270	270	270	270	260	260	250	[260]L	270	[270]L	270	[320]L	340	320	330	350	270H	270H	[260]L	250	250	250	280	260
25	260	250	250	250	260	250	L	L	L	380	270	310	360	340	340	(290)A	310	300	[280]L	250	250	250	260	260
26	270	270	280	290	270	270	250	[280]L	[320]L	350	350	360	350	370	350	300	250H	300	[280]L	260	250	[240]A	[250]A	260
27	270	270	250	230	250	260	L	L	L	280	290	330H	310	330	320	[300]L	290	[270]L	250	250	230	230	260	(270)S
28	[280]A	280	270	280	270	260	250	250	[260]L	270	300	(300)H	360	370	350	340	300	[270]L	[260]L	250	250	240	250	270
29	300	300	280	280	250	240	250	250	L	L	L	350	350	340	340	330	[320]L	300	260	250	240	230	250	270
30	290	300	300	270	270	250	270	250	270	320	300	340	330	340	310	290H	300	[280]L	250	250	240	240	260	270
31	280	290	300	270	260	250	250	[280]L	300	[300]L	[290]L	290	300	340	320	330	300	[280]L	260	240	240	230	250	270
Median	280	280	280	280	270	270	260	280	330	350	330	350	350	350	350	340	320	300	280	250	250	250	260	270
Count	31	31	31	31	31	30	29	27	27	29	29	31	31	31	31	31	31	31	31	31	31	31	31	31

* SUPPLEMENTARY DATA FROM FT BELVOIR, LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S. GOVERNMENT PRINTING OFFICE 1948 O - 703519

Form adopted June 1946

TABLE 50

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), August (Month), 1949

National Bureau of Standards (Institution)

Observed at Washington, D. C.

Scaled by: J.J.S., B.E.B.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

Calculated by: B.E.B., N.C.H., J. M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	6.7	6.3	5.9	5.6	5.5	5.2	6.1	7.5	7.3	(8.3)^{S}	8.6	(8.7)$^{J}_{S}$	8.4	8.6	(8.1)$^{J}_{S}$	8.5	8.4	(8.4)^{S}	8.1	8.4	(8.1)$^{J}_{S}$	(7.7)$^{J}_{S}$	6.7	6.8
2	6.7	6.3	6.0	5.7	4.3	3.7	4.7^{F}	5.5^{F}	5.5^{F}	5.8^{F}	6.3^{F}	6.9	(7.2)^{P}	C	C	A	6.6	6.8	7.0	7.0^{K}	8.2^{K}	7.0^{K}	5.9^{K}	5.8^{K}
3	4.9^{K}	4.2^{K}	2.3$^{F}_{K}$	1.9$^{F}_{K}$	1.9$^{F}_{K}$	2.4$^{F}_{K}$	3.1$^{F}_{K}$	4.7$^{F}_{K}$	<3.9$^{G}_{K}$	<3.9$^{G}_{K}$	<4.3$^{G}_{K}$	<4.5$^{G}_{K}$	*<4.5$^{G}_{K}$	*<4.6$^{G}_{K}$	*A^{K}	*<4.5$^{G}_{K}$	*4.9^{K}	*5.0^{K}	*5.4^{K}	*5.6^{K}	*6.2^{K}	*$_{K}$(6.1)$^{S}_{S}$	*3.5$^{F}_{K}$	*$_{K}$(3.9)$^{F}_{S}$
4	*(3.8)$^{S}_{K}$	*2.7^{K}	*3.3^{K}	*[2.6]$^{N}_{K}$	*1.9^{K}	*$_{K}$(2.6)$^{F}_{F}$	*4.1$^{F}_{K}$	*5.7^{F}	*$_{K}$(6.6)$^{F}_{S}$	*7.9	*7.2	*8.4	*(8.6)^{S}	8.5	7.9	8.5	8.4	8.8	8.9	8.6	7.3^{F}	(7.1)$^{S}_{F}$	6.6^{F}	6.5^{F}
5	5.5^{F}	5.2^{F}	4.5^{F}	3.8^{F}	3.1^{F}	3.0^{F}	4.3	4.3	5.1	6.0	5.8	6.1	6.9	7.3	7.3	7.6	7.6	7.5	7.5	7.5^{F}	7.9	7.3	6.8^{F}	6.7
6	6.0^{F}	5.6^{F}	5.0	4.4^{F}	3.7^{F}	3.7^{F}	4.9	5.3	5.2	5.7	6.5	6.4	6.9	7.3	7.5	7.4	7.8	7.9	7.7	7.3	7.5	6.5	6.1	5.7
7	5.3	5.0	4.5	3.9^{F}	3.2^{F}	3.4^{F}	4.9	5.6^{K}	5.4^{K}	5.8^{K}	6.7^{K}	6.1$^{F}_{K}$	6.1^{K}	6.1^{K}	6.5^{K}	6.2^{K}	5.6^{K}	5.9^{K}	6.5^{K}	6.7^{K}	7.0^{K}	6.8^{K}	6.5^{K}	5.9^{K}
8	5.0$^{F}_{K}$	3.7$^{F}_{K}$	2.6$^{F}_{K}$	2.9$^{F}_{K}$	2.5$^{F}_{K}$	3.0$^{F}_{K}$	4.1^{K}	5.1^{K}	4.9^{K}	6.0^{K}	6.0$^{F}_{K}$	6.0$^{F}_{K}$	6.2$^{F}_{K}$	(6.1)$^{P}_{K}$	5.0^{K}	6.1^{K}	6.1^{K}	6.2^{K}	6.6^{K}	6.5^{K}	6.0^{K}	$_{K}$(5.4)$^{A}_{F}$	4.9$^{F}_{K}$	4.4^{F}
9	4.1$^{F}_{K}$	3.9$^{F}_{K}$	3.4$^{F}_{K}$	3.3$^{F}_{K}$	2.8$^{F}_{K}$	(3.4)$^{A}_{K}$	4.8^{K}	5.5$^{F}_{K}$	6.2	6.5^{F}	6.9	6.8	7.1	(7.1)^{S}	7.4	7.3	7.4	7.2	7.1	7.1	6.8	6.2^{K}	5.3^{K}	4.8$^{F}_{K}$
10	4.6$^{F}_{K}$	4.3$^{F}_{K}$	$_{K}$(4.4)$^{S}_{F}$	3.5$^{F}_{K}$	3.0^{K}	3.0^{K}	4.6^{K}	5.4^{K}	5.1^{K}	5.1^{K}	5.0^{K}	<4.7$^{G}_{K}$	$_{K}$(5.5)$^{S}_{B}$	5.5^{K}	5.3^{K}	5.7^{K}	5.5^{K}	5.6^{K}	5.7^{K}	6.5	6.7	6.4	5.3	4.7
11	4.1	3.9	3.7	3.5	3.3	3.6	5.2	5.9	7.2	7.7^{V}	7.9	7.5	7.9	8.4	8.5	7.9	7.8	7.3	7.8	8.8	8.7	7.8	6.6	5.6
12	5.4	5.2	4.8	4.7	4.1	4.2	4.9	5.9	7.3	7.8^{V}	8.6	8.2	7.8	7.8	7.8	7.6	7.8	8.0	8.6	8.4	7.9	7.0	6.0	5.5
13	4.7^{F}	5.2^{F}	(5.4)^{S}	(4.5)$^{S}_{F}$	3.5^{F}	3.4^{F}	4.8	5.7	5.8	6.7	6.5	6.6	7.3	7.6	7.2	7.0	7.1	(7.0)^{S}	7.2	7.6	7.4	6.9	6.5	6.6
14	6.6	6.4	5.7	4.7	4.3^{F}	3.9^{F}	4.3	4.9	5.7	5.5	6.4^{F}	6.5	7.2	6.7	7.1	7.2	6.7	(7.7)^{S}	8.1^{K}	8.8^{K}	(7.9)$^{S}_{K}$	$_{K}$(7.1)$^{S}_{J}$	5.7^{K}	5.3^{K}
15	$_{K}$(4.6)$^{J}_{S}$	3.8$^{F}_{K}$	4.2$^{F}_{K}$	4.1$^{F}_{K}$	$_{K}$(4.3)$^{S}_{F}$	3.0$^{F}_{K}$	4.0^{K}	4.7^{K}	<4.2$^{G}_{K}$	<4.5$^{G}_{K}$	<4.7$^{G}_{K}$	<4.8$^{G}_{K}$	*5.5$^{F}_{K}$	*5.6$^{F}_{K}$	5.2^{K}	5.4^{K}	5.4^{K}	5.7^{K}	$_{K}$(6.0)$^{S}_{F}$	(6.0)$^{S}_{K}$	(6.0)$^{S}_{K}$	*6.0^{K}	*5.5$^{F}_{K}$	*(5.0)$^{J}_{K}$
16	*$_{K}$(4.3)$^{J}_{S}$	*$_{K}$(4.2)$^{J}_{S}$	*4.0^{K}	*(3.5)$^{F}_{K}$	*3.2$^{F}_{K}$	*3.2^{K}	*$_{K}$3.8$^{F}_{J}$	*$_{K}$4.6$^{F}_{J}$	4.9^{K}	5.4^{K}	5.6^{K}	5.6^{K}	5.7^{K}	6.0^{K}	(6.4)$^{S}_{K}$	6.6^{K}	(6.5)$^{S}_{K}$	(6.2)$^{S}_{K}$	(6.2)$^{S}_{K}$	(6.0)$^{S}_{K}$	$_{K}$(6.1)$^{J}_{S}$	(5.8)$^{S}_{H}$	5.4$^{F}_{K}$	5.2^{F}
17	5.2^{F}	5.0^{F}	4.9^{F}	4.7^{F}	(4.5)$^{J}_{S}$	(4.2)$^{J}_{S}$	(5.6)$^{J}_{S}$	(6.4)$^{J}_{S}$	7.0	7.6	7.9	7.6^{H}	8.6	8.6^{H}	7.8	8.0	*8.0	*8.1	8.6	8.9	8.5	7.4^{F}	(6.9)^{S}	5.7
18	4.9^{F}	4.7^{F}	(4.4)$^{S}_{F}$	4.1^{F}	4.0^{F}	3.6^{F}	4.3	5.0^{K}	5.6^{K}	5.7$^{F}_{K}$	[5.7]$^{A}_{K}$	<5.2$^{G}_{K}$	5.7^{K}	6.0^{K}	6.2^{K}	6.3^{K}	6.3^{K}	6.1^{K}	6.7^{K}	(6.5)$^{S}_{K}$	6.1$^{F}_{K}$	(6.0)$^{J}_{F}$	5.9	(5.6)^{S}
19	(5.4)^{S}	4.8	(4.3)$^{S}_{F}$	4.1	3.6	3.5	4.7	5.4	(5.7)$^{J}_{H}$	6.5	6.7	6.5	7.2	7.1	7.7	7.5	7.5	7.5	7.4	7.6	(7.1)^{S}	6.6	5.9	(5.6)^{S}
20	(5.3)^{S}	4.9^{F}	4.9^{F}	4.9^{F}	4.7^{F}	4.2^{F}	4.8	5.8	6.5	7.7	8.3	8.2	8.3	8.4	8.4	8.2	8.4	8.6	8.7	8.8^{V}	7.9	(6.9)^{P}	6.4^{F}	5.9^{F}
21	5.8^{F}	5.5^{F}	5.5^{F}	4.8^{F}	4.3^{F}	4.0	(6.0)^{S}	7.1	7.9	8.1	8.8	8.5	8.9	8.9	8.9	8.8	8.7	8.3^{H}	(8.6)^{S}	(8.8)^{S}	8.4	(7.3)^{S}	(7.0)^{S}	6.8
22	(6.6)^{S}	6.3	5.9^{F}	(5.6)$^{J}_{S}$	5.0	4.7	5.3	6.1	6.5	7.1	7.3	7.5	7.5	7.7	7.4	7.4	7.5	(7.3)^{F}	(7.1)$^{S}_{F}$	(7.1)$^{S}_{F}$	6.9^{F}	6.6^{F}	(6.5)$^{S}_{F}$	6.3^{F}
23	(5.9)$^{S}_{F}$	(5.5)^{S}	5.2	4.9	4.7	4.5	5.8	7.4	8.5	8.8	9.0	9.0	9.5	9.5	9.4	9.1	9.1	8.8	8.6	8.7	(8.0)^{S}	(7.5)^{S}	6.9	6.5
24	6.3	(6.0)$^{J}_{S}$	5.9	(5.5)$^{J}_{S}$	(5.1)^{S}	4.9	5.9	7.5	(8.2)^{S}	8.6	8.8	8.7	9.0	9.0	9.1	8.9	8.7	8.7	8.6	(8.7)$^{S}_{P}$	(8.8)$^{S}_{P}$	(7.8)^{S}	7.5	(7.2)$^{J}_{S}$
25	(6.8)$^{J}_{S}$	6.5	(6.1)$^{J}_{S}$	5.5	5.0	4.9	6.3	8.1	9.0	9.5	8.9	9.0	9.1	9.4	9.4	9.4	9.2	9.1	9.0	(9.2)^{S}	(8.8)^{S}	8.1	7.6	7.1^{F}
26	6.8	(6.4)$^{J}_{S}$	6.1	5.9	(5.6)$^{J}_{S}$	5.5	6.0	6.7	7.2	7.7	8.2	8.0	7.9	8.0	8.1	8.0	7.7	7.7	7.9	(8.0)^{S}	8.0	(7.2)$^{J}_{S}$	7.1	7.0
27	6.8	6.9	6.8	(5.8)^{S}	5.3	5.3	6.0	7.7	(8.9)^{S}	9.8	9.3^{H}	9.2	10.1	10.1	10.2	9.9	9.4	9.2	9.2	(9.5)^{S}	(8.7)^{S}	7.3	6.9	6.7
28	(6.2)^{S}	6.6	5.9	5.5	5.2	5.1	(6.0)$^{J}_{S}$	(7.2)^{S}	8.7	8.6	7.9	7.8	8.3	8.7	8.8	8.6	8.4	8.7	8.9	(9.2)^{S}	8.5	7.6	6.8	6.2
29	5.8	5.7	5.6	5.2	(5.0)^{S}	4.8	(5.9)^{S}	7.1	8.2	8.5	8.9	8.7	8.8	9.2	9.5	9.7	9.7	9.1	(9.7)$^{S}_{P}$	(9.6)^{S}	9.0	7.9	6.9	6.6
30	6.1	6.0	5.9	5.9	5.6	5.3	6.7	(8.4)$^{S}_{P}$	8.7	9.0	9.7	(8.9)^{S}	9.0	9.1	8.9	8.6	8.7	8.5	8.5	8.6	(7.9)$^{J}_{S}$	(6.9)$^{J}_{S}$	6.5	(5.8)^{S}
31	5.4	(5.3)$^{J}_{S}$	5.1	5.2	4.9	(4.2)^{S}	(5.9)^{P}	7.1	8.3	9.6	9.1	9.3	8.9	9.2	9.1	9.3	9.3	9.2	(9.6)$^{S}_{B}$	9.5	8.6	6.9	6.4	5.9
Median	5.4	5.2	5.0	4.7	4.3	3.9	4.9	5.8	6.5	7.6	7.3	7.5	7.8	7.9	7.8	7.8	7.8	7.7	7.9	8.4	7.9	7.0	6.5	5.9
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	30	31	31	31	31	31	31	31	31

* SUPPLEMENTARY DATA FROM FT. BELVOIR, LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 51

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D C

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), August (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.J.S., B.E.B.

Calculated by: B.E.B., N.C.H., J.M.W.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	65	60	(5.7) JS	(5.7) JS	53	58	7.2	7.6	(76) JS	(80) SP	87	86	(8.4) JS	87	(83) JS	84	86	85	81	8.7	(8.0) JS	(71) JS	6.8	69
2	6.7	6.0	60	52	40	4.1	49 F	65	60	68	59	72	C	C	66	6.6	68	69	[68] A	8.1 K	80 K	6.8 K	58 K	56 K
3	5.7 K	46 JK	1.8 FK	1.9 FK	20 FK	27 FK	3.2 FK	<38 GK	<38 GK	B K	<39 GK	B K	* A K	* A K	* <46 GK	* 49 K	* 56 K	* 5.0 K	* 55 K	* 57 K	* 66 FK	* 5.0 FK	* 3.7 FK	* 3.9 K
4	* [32] CK	* 3.5 K	* 35 FK	* N K	* 2.2 FK	* 31 FK	* 48 FK	* 66 F	* (65) F	* (7.4) F	* (78) JF	* (9.1) F	* 8.7	78	82	8.5	85	93	87	8.4	(75) J	68	6.8 F	56 F
5	55 F	46 F	39 F	3.5 F	29 F	36 F	48 F	49	58	60	65	6.7	74	70	7.7	76	7.7	7.3	7.6	7.7 F	77	7.1	6.9	6.5
6	57 F	5.3 F	4.7 F	4.2 F	37 F	43	53	52	55	5.7	62	67	69	76	7.6	7.7	7.7	8.2	7.3	7.3	72	6.4	5.8	5.5
7	5.1	49	4.1	3.7 F	31 F	42	5.4	55 K	57 K	60 K	[6.0] SK	(60) SK	6.1 K	63 K	6.3 K	59 K	59 K	6.2 K	6.5 K	70 K	70 K	6.6 K	62 K	5.7 K
8	3.7 FK	43 FK	2.8 FK	26 FK	26 FK	3.5 FK	45 K	49 FK	55 K	51 K	64 K	6.1 FK	5.6 K	58 K	(5.0) PK	60 K	6.2 K	6.6 K	6.5 K	62 K	5.7 K	48 FK	48 FK	K (4.3) FS
9	3.9 FK	37 K	3.4 FK	31 FK	2.7 FK	[4.0] AK	5.3 K	59 K	7.4	69	74	69	7.6	73	7.1	7.6	7.4	7.1	7.4	69	66	5.7 K	51 K	4.7 FK
10	4.6 K	43 FK	4.0 FK	31 FK	28 FK	3.7 K	5.1 K	57 K	53 K	<47 GK	[52] SK	K (55) SP	60 K	54 K	5.4 K	55 K	55 K	5.7 K	59 FK	6.7	66	60	4.9	4.5
11	39	3.7	35 F	33 F	33 F	43	57	65	7.4	78	7.3 H	77	81	87	80	78	77	7.5	84	8.9	82	7.2	5.9	5.4
12	53	49	47	44	41	(4.3) S	5.5	6.6	7.4	80	84	79	80	7.8	7.8	7.6	8.0	8.2	86	83	74	6.7	55	5.1
13	53 F	53 F	4.8 F	40 F	3.4	4.1	(5.1) S	(59) S	(65) S	6.7	67	69	7.6	7.6	72	7.0	7.0	7.0	73	79	7.3	6.6	67	(6.6) S
14	66	(5.9) S	(5.0) F	44 F	4.2 F	37	(46) JF	49	57	65	66	6.7	(7.0) S	(6.7) S	7.2	(7.0) S	(7.2) S	80	78 K	(86) SK	7.6 K	(6.4) R	K (53) JS	4.9 K
15	4.0 FK	(40) SK	42 FK	K (4.2) SF	3.8 FK	3.5 K	43 K	48 K	51 K	<46 GK	<47 GK	<4.8 GK	* 5.5 FK	<47 GK	5.2 K	55 K	(5.5) FK	5.8 K	K (59) JF	(5.5) SK	6.0 K	* 5.9 JK	* 5.3 K	* 4.5 K
16	* 4.2 K	* 4.0 K	* K (3.9) JS	* 3.2 FK	* 3.3 VK	* 3.7 JK	* 4.2 FK	* 47 K	5.3 K	[55] BK	5.6 K	<4.9 GK	<4.8 GK	6.0 K	(6.5) SK	65 K	6.2 K	62 K	(64) SK	K (6.0) JS	K 5.9 JS	55 FK	5.2 FK	4.9 F
17	5.1 F	4.8	47 F	(46) JS	44 F	4.7 F	(59) JS	66	73	7.4	79	8.5	8.5	8.1	7.9	* 7.9	* 82	* 80	8.9	(88) S	80	(7.1) S	6.5 F	(5.2) SF
18	49 JF	4.6 F	4.4 F	4.1 F	38 F	(41) S	(47) SF	5.3 FK	54 FK	57 K	56 K	<50 GK	5.8 K	60 K	63 K	63 FK	6.2 K	6.5 K	6.7 K	K (6.1) JS	FK (6.1) JS	6.0	(57) S	5.5 F
19	(5.0) P	(4.4) JS	4.0	39	35 F	4.1	5.3	57 J	6.2	6.3	6.8	6.9	69	7.3	7.6	(7.5) S	74	7.4	(7.4) JS	(7.2) JS	6.5 F	(62) AJ	(60) JS	5.3
20	5.0 F	4.9 F	4.9 F	4.9	4.3 F	(45) JS	5.2	(61) JS	7.1	8.2	8.1	8.4	83	84	8.2	8.2	86	86	8.8	8.3	7.5	6.7	6.0 F	6.0 F
21	5.7 JF	5.6 F	50 F	46 F	3.9 F	4.7 F	66	7.8	81	8.5	8.5	8.9	88	88	8.9	8.7	85	8.7	85	(9.0) S	8.1	(7.1) JS	(7.0) S	(6.7) S
22	63	59 V	5.8	53	4.9 V	4.8	58	(6.4) S	69	72	(7.1) S	7.6	7.4	74	7.6	7.4	75	72 F	7.2 F	(7.2) S	6.8 F	(6.0) SF	6.4 F	5.7 F
23	58 F	5.2	(4.9) S	4.9	4.4 F	48	6.5	(79) S	8.9	8.9	(8.9) S	9.1	9.5	9.6	9.1	9.1	(89) S	88	(8.2) JS	(86) S	(7.8) JS	(7.1) JS	6.7	(65) S
24	62	(6.0) JS	56	(54) JS	49	5.3	6.8	7.4 V	85	89	8.7	89	9.0	90	(9.0) S	8.8	8.7	8.6	8.7	(89) S	(8.1) JS	7.6	(7.4) S	7.1
25	(6.7) S	64	(60) JS	5.4	5.0	(5.5) P	7.2	88	92	95	90	8.9	93	93	9.2	9.3	9.0	9.2	(9.3) S	(89) S	(8.3) JS	7.8	(7.3) JS	6.9
26	67	64	5.9	(56) JS	5.6	5.5	6.5	6.7	7.4	7.9	8.0	81	78	83	8.1	7.8	7.8	79	(7.9) S	80	(78) JS	(7.2) S	(7.1) S	7.0
27	68	6.9	6.3	5.7	(5.3) S	5.3 F	6.7 V	87	94	94	97	10.2	9.7	99	10.0	(9.5) S	93	9.2	9.1	9.0	8.4	7.0	6.8	(6.1) JS
28	(64) S	6.6	5.5	(53) JS	(49) JS	5.3	69	8.2	8.7	83	7.7	7.9	8.5	8.6	8.7	8.5	87	8.9	(9.1) S	89	8.0	(71) S	6.5	(5.9) S
29	5.7	5.6	5.2	52	49	5.3	6.5	7.6	81	(8.5) S	89	88	9.1	95	9.7	(96) S	93	(96) S	(9.7) SP	(9.3) S	8.5	(7.3) S	69	63
30	59	5.9	(6.0) SJ	5.6	5.4 F	56 F	7.4	(88) S	8.6 V	9.7	92	8.8	9.1	9.1	8.7	8.6	8.7	85	8.7	8.3	(76) S	6.8	60	5.5
31	(54) S	(5.3) S	5.2	5.2	(4.4) SF	4.7	6.8	73	9.0	9.7	9.0	9.3	(9.0) S	(90) S	(92) SP	9.4	92	95	(9.7) S	89	7.9	6.6	(6.1) SJ	5.8
Median	55	52	4.8	4.5	4.0	4.3	5.4	6.5	7.1	7.4	7.4	78	8.0	7.8	78	7.7	7.7	8.0	7.9	8.3	7.6	6.7	6.1	5.6
Count	31	31	31	30	31	31	3.1	31	31	30	31	30	29	29	31	31	31	31	31	31	31	31	31	31

* SUPPLEMENTARY DATA FROM FT BELVOIR,
LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 52

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit), August (Month), 1949

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.J.S., B.E.B.

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q	Q	220	200	S	S	S	230	200	B	B	230	Q					
2							250	230	(220) A	200	210	220	200	C	C	220	220	250	250					
3							Q K	250 K	220 K	220 K	240 K	230 K	*250 K	*230 K	*A K	*A K	*250 K	*240 K	*250 K					
4							*Q F	*Q	*220	*A	*A	*220	*(220) B	220	S	230	230	250	A					
5							Q	Q	230	220	A	B	240	(230) S	210	230	220	250	240					
6							260	240	A	200	200	200	200	210	200	240	220 H	240	Q					
7							230	220 K	220 K	200 K	200 K	200 K	230 K	230 K	230 K	200 K	220 K	220 K	240 K					
8							Q K	220 K	250 K	200 K	B K	(240) B K	(240) A K	A K	A K	(250) A K	230 K	240 K	A K					
9							Q K	(230) A K	210	200	A	A	210	220	230	220	230	250	A					
10							Q K	250 K	230 K	220 K	220 K	200 K	220 H	220 K	220 K	210 K	220 K	(230) A K	(210) A K					
11							Q	220	230	210	200	190	200	200	210	210	210	220	240					
12							Q	*230	(220) A	210	200	230	200	220	200	250	220	(230) A	Q					
13							250	(230) A	250	220	260	A	A	N	(250) A	200	220 H	230	250					
14							Q	250	230	200	220	230	210	230	(220) A	230	210	250	250 K					
15							270 K	250 K	N K	220 H K	(230) A K	(190) A K	*(230) B K	*250 K	230 K	240 K	250 K	A K	A K					
16							*Q K	*250 K	220 K	220 K	200 K	200 K	230 K	220 K	230 K	220 K	230 K	240 K	250 K					
17							Q	240	230	A	220	(220) A	(220) A	230	230	240	*(240) B	*A	Q					
18							250	220 K	210 K	210 K	A K	A K	200 K	A K	A K	260 K	A K	A K	260 K					
19							Q	230	210	220	230	220	200	220	220	220	220	230	250					
20							200	A	240	(220) A	220	210	210	A	220	210	230	220	Q					
21							Q	230	230	220 H	210	210	200	240	210	220	230	240	Q					
22							Q	250	240	220	200	230	220	220	210	230	230	230	250					
23							Q	250	A	210 H	200	180	180 H	230	220	210	230	210	220					
24							Q	230	200 H	200	200	180 H	180 H	200 H	240	230	220	230	250					
25							240	240	230	220	210	220	200	210	220	230	230	240	250					
26							Q	250	220	210	A	210 H	200	240	230	220	230	220	270					
27							240	240	220	210	210	200	200	220	200 H	210	230	240	Q					
28							Q	240	220	220	200	(180) H	200 H	240	250	(200) H	230	230	250					
29							Q	240	230	220	200	220	200 H	220	230	230	230	230 H	240					
30							Q	240	240	220	200 H	210 H	210	220 H	220	230	220	240	240					
31							Q	240	210	230	180 H	210 H	200 H	220	210	230	240	240	260					
Median							250	240	220	220	205	210	200	220	220	230	230	235	250					
Count							9	27	28	29	24	26	29	26	26	29	29	28	20					

* SUPPLEMENTARY DATA FROM FT. BELVOIR, LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1948 O - 703518

TABLE 53

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

Form adopted June 1946

foF1 (Characteristic), Mc (Unit), August (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.J.S., B.E.B.

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q	Q	4.5	53	52	[5.2]L	53	5.4	5.3	B	B	4.5	Q					
2							L	45F	47F	50	(55)P	50	53P	C	C	45	48	(42)A	A					
3							QK	36FK	39K	39K	(43)PK	(45)PK	*(45)BK	*(46)PK	*[46]AK	*45K	*43K	*4.5K	*(4.0)PK					
4							*QK	*Q	*48F	*45	*4.8	*51	*50	49	5.4	50	50	46	L					
5							Q	Q	L	48	A	B	4.9	(52)S	51	50	49	L	L					
6							L	41	45	46	49	51	53	53	5.1	5.1	49	L	Q					
7							L	52K	49K	47K	49K	48K	(47)SK	48K	47	48K	4.7K	4.4K	3.9K					
8							QK	4.1K	43K	4.5K	(4.7)BK	4.9K	50K	AK	AK	48K	37K	37K	AK					
9							QK	4.6K	43	4.4	4.9	[50]A	50	4.8	50	48	46	4.3	A					
10							QK	41K	4.5K	4.5K	4.6K	4.7K	48K	47K	47K	46K	4.7K	4.3K	3.9K					
11							Q	*L	L	4.7	4.9	53H	5.1	4.9H	4.9	48	4.5	L	L					
12							Q	L	4.7	4.9H	4.9	54H	50	5.0	4.7	49	4.8	L	Q					
13							L	L	47	4.8	48	53	4.9	[50]N	(5.0)A	(4.3)S	43	4.0	L					
14							Q	4.3	47	46	49	52	4.9	5.1	A	L	4.8	L	LK					
15							LK	39K	[4.2]NK	4.5HK	4.7K	[48]NK	*4.8K	*4.8K	4.7K	47K	46K	4.3FK	AK					
16							*QK	*40PK	43K	46K	47K	49K	4.9K	49HK	(5.1)SK	46K	50K	LK	LK					
17							Q	L	L	(56)P	[54]A	(5.3)P	5.6	(5.5)P	(55)P	(5.3)P	*4.9L	*(43)L	Q					
18							L	LK	(4.7)PK	50K	49FK	52HK	5.1K	AK	AK	49K	(5.0)PK	47K	LK					
19							Q	L	45	4.9	56H	5.5H	5.2H	5.7H	5.4H	5.3	47	L	L					
20							L	A	(50)P	(54)P	L	L	(56)P	58H	54	4.8	(4.9)P	L	Q					
21							Q	L	L	L	L	(5.8)P	(54)P	5.8	(51)P	(56)P	L	L	Q					
22							Q	L	(53)P	(4.4)P	46	(5.9)P	5.5	(5.6)P	(58)P	53	(5.5)P	L	L					
23							Q	L	L	L	(5.5)P	[5.6]L	(5.7)P	(59)P	(5.9)P	L	L	L	L					
24							Q	L	L	L	(46)P	[5.1]L	5.6	(56)P	(58)P	(6.1)P	(4.5)P	(4.5)P	L					
25							L	L	L	L	(53)P	(5.9)P	(6.3)P	(5.8)P	(5.6)P	4.9	L	L	L					
26							Q	L	L	(55)P	56	(62)P	(5.9)P	(5.4)P	(54)P	(4.8)P	(5.0)P	(4.4)P	L					
27							L	L	L	(5.7)P	54	(6.0)P	[6.0]L	(5.9)P	(6.4)P	L	L	L	Q					
28							Q	L	L	L	(53)P	(59)P	(55)P	(5.8)P	(57)P	(5.5)P	(5.2)P	L	L					
29							Q	L	L	L	L	(6.0)P	(5.8)P	(52)P	(5.4)P	L	L	L	L					
30							Q	L	L	L	L	(5.9)P	(5.6)P	(6.0)P	(5.5)P	49	L	L	L					
31							Q	L	(5.3)P	L	L	(57)P	(56)P	5.7	(5.9)P	(56)P	L	L	L					
Median							—	4.1	4.7	4.7	4.9	(5.3)	5.3	5.4	(5.4)	4.9	48	4.4	—					
Count								10	19	23	25	29	31	28	27	26	23	14	3					

* SUPPLEMENTARY DATA FROM FT. BELVOIR, LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S GOVERNMENT PRINTING OFFICE 1946 O - 703519

TABLE 54

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

Form adopted June 1946

h'E (Characteristic), Km (Unit), August (Month), 1949

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: J.J.S., B.E.B.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	100	100	100	100	100	100	100	B	B	A	90	100				
2							100	100	100	100	100	100	90	C	C	110	100	100	110					
3							110 K	110 K	100 K	100 K	100 K	100 K	*100 K	*100 K	*B K	*120 K	*120 K	*120 K	*110 K					
4						*120 K	*110 K	*100	*110	*B	*110	*100	*100	100	120	120	120	120	120					
5							130	120	110	110	100	100	(100) A	100	100	100	110	100	120	130				
6							120	100	110	100	110	100	100	100	100	100	100	100	B	A				
7							120	120 K	110 K	(120) A K	100 K	100 K	100 K	110 K	100 K	100 K	100 K	100 K	120 K					
8							120 K	110 K	120 K	110 K	(110) B K	B K	B K	120 K	110 K	100 K	100 K	100 K	110 K					
9							(120) A K	110 K	110	120	110	100	100	100	100	100	100	110	120					
10							130 K	110 K	100 K	100 K	100 K	100 K	100 K	100 K	100 K	110 K	100 K	100 K	*110 K					
11							*130	120	*100	100	(100) A	100	100	100	100	100	100	(120) A	110					
12							120	110	110	100	(110) A	110	100	100	110	110	110	110	110					
13							130	110	110	100	100	100	100	100	A	100	100	100	110					
14							120	110	110	100	100	100	110	100	110	100	140	110	110 K					
15							(100) A K	110 K	110 K	100 K	100 K	100 K	*110 K	*110 K	110 K	110 K	110 K	110 K	A K					
16							(100) A K	*120 K	110 K	110 K	110 K	100 K	100 K	110 K	100 K	100 K	110 K	110 K	110 K					
17							110	110	110	110	100	100	100	100	100	100	*110	*120	120					
18							130	110 K	110 K	110 K	A K	A K	110 K	100 K	100 K	110 K	110 K	110 K	120 K					
19							130	110	110	110	100	100	100	100	130	120	110	110	120					
20							110	A	150	A	120	110	120	A	110	A	100	100	110					
21							110	110	110	120	120	110	110	110	110	110	110	110	120					
22							120	100	A	110	100	100	100	110	100	100	100	100	110					
23							120	110	110	100	100	100	100	110	110	100	100	100	120					
24							120	110	110	110	100	100	100	100	(130) A	(120) A	110	(120) A	A					
25							120	A	110	(150) A	A	A	(130) A	120	110	A	130	110	(120) A					
26							A	A	(130) A	(120) A	(110) A	100	A	A	A	(110) A	(110) A	110	120					
27							140	A	A	100	(120) A	(120) A	110	(110) A	(110) A	110	(110) A	A	110					
28							110	110	A	A	(140) A	(130) A	(120) A	110	(120) A	(120) A	(120) A	(120) A	A					
29							170	120	(120) A	(120) A	110	120	120	110	110	110	110	110	(140) A					
30							120	120	110	130	(130) A	(110) A	120	100	110	110	110	110	120					
31							150	(120) A	(130) A	(120) A	110	(110) A	(120) A	110	110	110	110	110	(140) A					
Median						—	120	110	110	110	100	100	100	100	110	110	110	110	120	—				
Count						1	29	26	28	28	29	28	29	28	27	28	30	29	27	2				

* SUPPLEMENTARY DATA FROM FT. BELVOIR, LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 23.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

TABLE 55

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

Form adopted June 1946

foE, Mc (Characteristic) (Unit), August (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.J.S., B.E.B.

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	3.3	3.6	3.7	(3.7)S	3.8	3.7	3.7	B	B	A	2.5	2.0				
2							2.3F	2.7	3.1	3.3	3.9	3.8	A	C	C	3.5	3.2	2.8	2.3					
3							A K	2.6K	2.7K	3.0K	3.3K	3.7K	*3.7K	*(3.7)K P	*[3.6]K B	*3.5K	*3.2K	*(2.9)K S	*2.4K					
4						*1.8K	*2.5K	*2.7	*2.9	*A	*A	*A	*B	3.7	3.7	3.7	3.3	[2.9]A	(2.5)A					
5							2.5	2.9	3.1	A	A	A	3.7	3.7	3.5	3.5	3.4	3.1	2.5	A				
6							2.1	(2.5)A	3.0	3.1	A	A	3.9	3.8	3.7	3.6	3.2	3.0	[2.5]B	A				
7							1.9	2.5K	3.1K	3.6K	3.6K	(3.6)K P	(3.6)K P	3.7K	3.7K	3.5K	3.2K	2.9K	2.5K					
8							2.0K	[2.4]K A	2.9K	3.0K	3.3K	B K	B K	3.5K	3.8K	3.5K	3.2K	2.9K	2.2K					
9							A K	2.5K	2.9	3.2	3.2	3.2	3.3	A	A	3.5	3.2	2.9	(2.3)A					
10							2.1K	2.5K	2.9K	[3.2]K A	(3.5)K A	[3.6]K A	3.8K	3.7K	3.6K	3.5K	3.2K	2.9K	*2.2K					
11							*2.1	2.7	*2.9	3.1	3.4	3.6	3.8	(3.7)A	3.6	3.5	3.2	3.0	(2.3)A					
12							A	2.5	(3.1)A	[3.4]A	3.6	[3.6]A	3.7	4.1	3.7	3.4	3.2	2.8	(2.3)A					
13							2.0	2.7	3.1	[3.1]A	3.1	3.0	3.1	3.5	[3.4]A	3.4	3.4	3.1	2.3					
14							2.0	2.4	3.0	3.6	3.5	3.6	3.8	3.8	3.7	3.3	(3.2)A	[2.8]A	2.3K					
15							A K	2.3K	2.8K	3.1K	3.1K	3.3K	3.7K	3.8K	3.8K	3.7K	3.1K	2.8K	(2.4)K A					
16							A K	*2.5K	[3.0]K A	(3.5)K A	3.6K	3.8K P	4.0K	4.0K	3.8K	3.6K	3.3K	2.9K	2.1K					
17							2.1	2.5	3.0	2.8	3.6	3.8	4.3	4.0	4.1	3.8	*3.4	*3.0	2.2					
18							1.9	2.7K	3.3K	3.2K	A K	A K	4.0K	3.8K	3.7K	3.6K	3.3K	3.0K	2.9K					
19							2.1	2.8	3.2	3.6	3.8	3.8	4.0	[4.0]A	3.9	3.8	3.5	3.1	2.4					
20							2.0	A	A	A	3.9	4.0	4.1	4.1	3.9	3.5	3.3	2.9	2.1					
21							2.2	3.0	3.3	3.6	3.8	4.0	4.2	4.3	4.0	3.8	3.4	3.1	(2.3)A					
22							2.1	2.8	3.0	3.5	3.9	4.2	4.2	4.0	3.9	3.7	3.3	3.0	2.3					
23							2.1	2.7	3.3	3.6	3.8	4.1	4.2	4.3	4.0	3.7	3.5	3.0	2.2					
24							2.1	2.8	3.3	3.5	3.9	4.0	4.0	4.2	4.2	3.9	3.4	3.1	A					
25							2.1	2.7	3.1	(3.6)A	(3.9)A	(4.3)A	4.3	4.4	4.0	[3.8]A	3.6	3.0	2.0					
26							A	(2.8)A	3.3	3.5	3.8	3.9	[4.0]A	(4.2)A	4.0	3.7	3.4	3.1	2.5					
27							2.1	2.8	(3.3)A	3.5	3.8	4.0	4.2	4.1	4.0	3.9	3.3	(3.0)A	2.3					
28							2.2	2.6	(3.0)A	[3.4]A	(3.7)A	(4.0)A	3.9	4.1	(4.0)A	[3.6]A	3.3	2.9	A					
29							2.1	2.7	3.2	3.5	3.8	4.0	4.0	3.8	3.8	3.7	3.3	2.9	2.2					
30							2.0	2.5	2.9	3.4	3.7	3.9	3.9	3.9	3.8	3.6	3.3	2.8	2.3					
31							2.0	2.6	3.2	3.4	3.7	4.0	4.0	4.1	3.9	3.7	3.3	2.8	2.2					
Median						—	2.1	2.7	3.1	3.4	3.7	3.8	4.0	3.9	3.8	3.6	3.3	2.9	2.3	—				
Count						1	24	29	30	28	27	26	28	29	29	30	30	30	29	1				

* SUPPLEMENTARY DATA FROM FT. BELVOIR, LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S GOVERNMENT PRINTING OFFICE 1946 O - 703518

TABLE 56

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

Es (Characteristic), Mc,Km (Unit), August (Month), 1949

National Bureau of Standards (Institution)

Observed at Washington, D. C.

Scaled by: J.J.S., B.E.B.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11
1	3.3/100	3.1/100	4.3/110	3.4/110	5.2/110	4.0/110	5.7/100	6.7/100	4.6Y/120	3.8/120	3.9/120	G
2	3.2/100	2.5/100	4.0/100	3.4/100	2.3/100	3.2/100	3.2/110	4.0/110	3.8/110	G	G	G
3	G	G	G	G	G	1.8/120	2.2/130	G	3.0/120	G	G	G
4	C	C	C	C	C	C	C	C	C	C	C	C
5	3.7/110	2.9Y/120	3.0Y/120	G	G	G	G	4.4/120	3.4/130	3.7/120	5.4/100	3.5/100
6	G	G	G	6.6Y/120	3.0/100	2.6Y/110	G	3.6Y/120	4.7/120	4.5/120	4.7/120	3.8/110
7	G	G	G	G	G	G	2.1/130	2.7/130	3.5/130	3.4/100	3.2/100	G
8	G	G	G	G	G	G	G	3.6Y/120	4.4Y/120	3.4/120	3.6/110	3.6/100
9	3.2/110	5.0Y/120	3.3/130	3.3/110	3.1/110	6.0/120	3.5/120	4.6/120	5.2/110	4.3/130	5.6Y/120	6.0/110
10	G	2.6/100	3.8/100	G	2.5/130	3.2/130	3.0/140	3.9/100	3.9/120	4.1/110	3.8/120	3.7/110
11	T	T	T	T	T	T	T	T	3.2/120	5.7Y/120	3.2/120	G
12	G	G	G	G	3.8/120	3.1/120	3.6/120	4.2/130	4.6/120	6.6Y/120	3.5/120	4.0/120
13	4.5/110	5.2Y/110	G	G	G	6.2Y/110	G	3.3Y/120	G	3.4/120	3.5/110	5.3/110
14	G	G	G	G	G	G	4.2/110	3.0/140	3.9/120	6.9Y/140	3.8/120	3.8/130
15	4.6/120	3.2/150	3.5Y/170	2.6/120	G	G	2.0/130	G	3.1/130	3.1/130	3.9/120	G
16	C	C	C	C	C	C	C	C	3.7/110	4.0Y/110	3.3/120	G
17	3.5/100	4.3/100	4.0Y/110	2.6/110	2.6/110	G	2.1/120	3.5/130	3.7Y/120	4.6/120	5.2/120	4.8/130
18	3.6/110	3.7/110	3.1/110	G	G	G	2.1/150	G	G	4.7Y/120	6.9Y/110	4.1/110
19	G	G	4.1/110	3.3/110	2.8/110	3.2/110	G	3.4/130	3.2/120	G	3.9/110	4.7/110
20	3.2Y/110	3.9/150	3.1/170	2.0/110	G	2.2/110	G	5.4/100	4.3/100	4.5Y/100	3.1/100	3.1/100
21	G	G	2.4/110	3.0/120	3.9/110	3.1Y/110	G	3.5/120	G	3.1/110	2.8/100	G
22	2.6Y/110	2.6Y/110	2.8/110	3.2/100	5.3Y/170	G	G	G	3.6/110	3.0/100	G	G
23	2.6/100	2.3/110	G	G	G	G	2.9/100	G	4.1/130	3.8/130	G	G
24	G	G	G	G	G	G	G	G	4.1/130	2.3/100	G	G
25	2.4/110	2.2/110	G	G	G	2.3/130	G	4.7/120	4.4/120	4.4/100	4.2/100	4.0/100
26	2.2/110	G	G	3.0/110	3.1/100	3.1/100	5.3/100	3.8/100	2.9/100	3.1/100	5.5/110	5.5Y/120
27	G	2.3/110	(2.3)S/100	G	G	G	G	2.6/110	4.2/100	G	3.2/100	3.2/100
28	5.5/100	3.8/100	3.2/100	2.3/100	G	6.3Y/120	3.0/120	4.0/120	4.3/100	4.3Y/100	4.3Y/100	3.8/100
29	G	G	3.2/100	G	G	G	1.8/130	2.0/110	2.8/100	5.4Y/100	2.9/100	3.0/100
30	G	G	G	G	G	G	G	3.4/120	3.9/120	3.0/100	3.2/100	2.4/100
31	G	G	G	2.3/110	G	G	G	2.2/110	7.0Y/100	2.6/100	2.2/100	3.6Y/100
Median	**	2.2	2.4	**	**	**	1.9	3.4	3.8	3.8	3.5	3.4
Count	28	28	28	28	28	28	28	28	30	30	30	30

Day	12	13	14	15	16	17	18	19	20	21	22	23
1	4.2/100	4.0/120	3.8/110	B	B	2.8/90	G	G	G	G	3.8/100	4.8/100
2	3.8/110	C	C	G	G	4.5/130	4.6/130	3.7/130	3.2/130	G	G	3.6Y/100
3	C	C	C	C	C	C	C	C	C	C	C	C
4	C	3.7/130	3.8/130	G	G	3.7/120	3.7/120	1.9/120	G	G	G	G
5	3.4/100	G	G	G	G	G	G	3.1Y/120	3.9/110	2.8Y/110	G	G
6	4.6Y/110	G	3.9/120	4.3/130	3.8/130	4.2/130	G	4.0/120	3.1/110	3.8/100	G	G
7	G	G	G	G	G	G	G	2.9Y/120	G	G	G	G
8	4.6Y/110	4.8Y/110	4.6Y/130	5.4/130	3.7/140	G	5.9/120	4.8Y/110	4.2/110	6.8/110	7.8/110	4.0/110
9	G	4.8/110	3.7/110	G	G	4.3/130	4.7/120	4.1/120	G	3.9/110	G	2.5/100
10	G	G	G	T	T	T	T	T	T	T	T	T
11	G	4.2/130	4.8/130	3.8/120	4.1/110	3.7/120	3.8/130	3.8/110	3.4/110	4.6/110	5.3/100	G
12	3.9/120	G	3.0/100	3.2/100	6.8Y/130	5.6Y/130	5.4Y/110	3.1Y/110	3.4Y/110	3.1Y/110	3.7/110	2.3/120
13	3.7/100	G	4.5/100	G	G	G	G	1.8/130	G	2.0/120	G	G
14	G	4.2/120	4.9Y/110	3.8/120	3.9/120	3.8/120	3.1/120	1.8/160	G	G	G	2.3/160
15	C	C	G	G	3.2/140	3.2/150	4.2/130	3.9Y/120	2.4Y/120	C	C	C
16	G	G	4.1Y/130	4.0/130	3.5/130	4.4Y/130	4.3/120	1.7/110	1.8/110	3.8/110	7.0Y/110	3.4/110
17	5.5/130	4.5/120	G	G	C	C	5.4/120	3.2/130	4.7/110	3.0Y/110	5.8/110	3.7/110
18	4.3/130	4.4/130	6.6/120	4.8/120	4.2/130	10.2/120	3.5/120	3.2Y/110	3.2/130	1.7/120	G	G
19	G	3.6/110	3.4/100	2.9/100	2.4/100	1.9/100	1.8/100	G	3.3/110	4.4/110	6.0/110	3.0/110
20	3.8/100	4.3/100	G	3.1/100	G	3.4/130	3.3/130	G	2.2/100	G	2.7/100	G
21	2.1/100	G	G	G	G	G	2.5/130	2.9Y/120	G	G	G	2.3/110
22	G	G	G	G	3.8Y/110	3.7/110	3.1Y/110	G	4.0Y/110	G	2.9Y/110	G
23	G	G	G	G	G	4.4/130	3.3/130	G	2.3/100	3.0/100	3.0/100	G
24	G	G	3.6/100	3.8/100	2.6/100	3.6Y/110	4.3/110	3.7/120	3.8/110	4.3/110	3.7/110	2.6/110
25	3.6/100	3.1/100	2.6/100	4.0/120	3.8/140	4.0/120	3.1/130	3.2/100	2.8/110	2.3/110	3.3/100	3.2/110
26	4.2/100	4.3/100	3.0/100	2.4/100	2.1/100	2.0/100	G	G	G	3.6/110	5.4/110	2.4/110
27	2.6/100	3.1/100	3.2/100	2.6/100	2.2/100	4.3/110	G	G	G	2.3/100	2.3/110	3.5/100
28	3.3/100	3.3/100	4.3/100	4.3/100	3.7Y/100	3.5/100	3.3/100	3.8/100	(4.2)S/100	3.3/100	G	G
29	3.0/100	2.7/100	2.2/100	1.8/100	2.3/100	G	2.0/120	2.3/100	G	G	G	G
30	2.7/100	2.3Y/100	G	G	G	G	G	G	G	G	G	G
31	3.0/100	2.8/100	2.5/100	G	G	G	5.6/120	G	G	G	G	G
Median	3.0	3.0	3.0	2.1	2.3	3.6	3.3	2.9	2.3	2.3	**	**
Count	28	28	29	28	27	28	29	29	29	28	28	28

** MEDIAN fEs LESS THAN MEDIAN foE, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S GOVERNMENT PRINTING OFFICE 1946 O - 703319

Form adopted June 1946

TABLE 57

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

(M1500)F2 (Characteristic), ____ (Unit), August (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.J.S., B.E.B.

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.8	1.8	1.9	1.8	1.9	2.1	2.2	2.2	2.1	(2.2)J	1.7	(2.1)JS	2.0	2.0	(1.9)JS	1.9	2.0	(1.9)J	2.0	2.0	(2.1)JS	(2.0)JS	1.8	1.8
2	1.8	1.7	1.7	1.8	1.6	1.8	1.8F	1.8F	1.7F	1.9F	1.8F	1.8	(1.8)P	C	C	A	1.8	1.9	2.0	2.1K	1.8K	1.9K	1.9K	1.6K
3	1.6K	1.7K	1.5FK	1.3FK	1.6FK	1.8FK	1.8FK	2.0FK	GK	GK	GK	GK	*GK	*GK	*AK	*GK	*1.4K	*1.7K	*1.7K	*1.9K	*1.8K	*K(1.9)JS	*1.6FK	*K(1.6)FS
4	*(1.6)SK	*1.7K	*1.5K	*NK	*1.7K	*K(1.5)JF	*1.8FK	*2.1F	*(2.2)FS	*1.9	*2.1	*1.8	*(1.9)J	1.9	1.8	1.8	1.7	1.7	1.9	2.0	1.9F	(1.8)JF	1.8F	1.8F
5	1.8F	1.7F	1.8F	1.8F	1.8F	1.9F	2.0	2.3	2.0	2.0	1.9	1.8	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.0F	1.9	1.9	1.9F	1.9
6	1.8F	1.8F	1.9	1.8F	1.8F	1.9F	2.0	2.1	1.6	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	1.9	1.8	1.8	1.9
7	1.8	1.8	2.0	1.9F	1.9F	2.0F	2.1	1.8K	2.0K	1.9K	1.9K	1.8K	1.8K	1.7K	1.8K	1.9K	1.9K	1.9K	1.9K	1.9K	1.8K	1.7K	1.7K	1.7K
8	1.6FK	1.8FK	1.8FK	1.9FK	1.8FK	1.9FK	2.0K	1.9K	1.6K	1.9K	1.8FK	1.8FK	2.1FK	(2.0)PK	1.8K	1.8K	1.8K	1.9K	2.0K	2.1K	1.9K	K(2.0)AF	1.8FK	1.9FK
9	1.9FK	1.8FK	1.8FK	1.9FK	1.9FK	(1.9)AK	2.3K	1.9FK	2.0	1.8F	2.1	1.9	1.8	(1.9)J	2.0	1.9	2.0	1.9	2.0	2.1	1.9	1.9K	1.9K	1.8FK
10	1.8FK	1.9FK	K(2.0)SF	2.0FK	1.8K	1.9K	2.0K	1.9K	1.7K	1.8K	1.6K	GK	K(1.8)SP	1.8K	1.7K	1.9K	2.0K	1.9K	1.8K	1.9	1.9	2.0	2.0	1.9
11	1.9	1.9	1.8	1.9	2.0	2.0	2.3	2.1	2.1	2.0V	2.0	2.0	1.9	2.0	2.0	2.0	2.1	2.1	1.9	2.0	2.0	2.1	2.0	1.9
12	1.9	1.8	1.9	1.7	1.9	2.2	2.3	2.0	2.2	2.2V	2.1	1.9	2.0	2.0	2.0	2.0	1.9	1.9	1.8	2.0	2.0	2.0	2.0	1.8
13	1.9F	1.8F	(1.9)S	(2.0)SF	1.9F	2.1F	2.1	2.0	2.1	2.0	2.1	2.1	2.0	1.9	2.0	1.9	2.0	(2.0)S	2.1	2.0	1.8	1.8	1.7	1.8
14	1.5	1.9	1.9	1.8	1.7F	1.8F	2.0	1.9	1.8	1.7	2.0F	1.7	2.0	1.8	1.9	2.0	1.8	(1.9)S	1.9K	1.8K	(2.0)SK	K(1.9)JS	1.8K	1.8K
15	K(1.8)JS	1.7FK	1.7FK	1.7FK	K(2.0)FS	2.0FK	2.0K	1.9K	GK	GK	GK	GK	*1.6FK	*1.6FK	1.6K	1.7K	1.6K	1.8K	K(1.8)SF	(1.9)SK	(1.8)SK	*1.8K	*1.9FK	*(1.9)JK
16	*K(1.8)JS	*K(1.8)JS	*1.9K	*(1.7)PK	*1.7FK	*1.8K	*K(1.9)FJ	*K(1.8)FJ	1.7K	1.6K	1.7K	1.8K	1.6K	1.8K	(1.7)SK	1.8K	(1.8)SK	(1.9)SK	(1.9)SK	(2.0)SK	K(1.9)JS	(1.8)SK	1.8FK	1.7F
17	1.7F	1.7F	1.8F	1.8F	(1.9)JS	(2.0)JS	(2.2)JS	(2.3)JS	2.1	2.0	1.9	1.8H	1.9	1.9H	1.9	1.8	*1.9	*1.9	1.9	2.0	2.0	2.0F	(2.0)S	1.9
18	1.7F	1.7F	(1.7)SF	1.7F	1.6F	1.8F	2.0	2.0K	2.0K	1.7FK	AK	GK	1.6K	1.7K	1.7K	1.7K	1.7K	1.7K	1.9K	(1.9)SK	1.7FK	(1.8)JF	1.8	(1.8)S
19	(1.8)S	1.9	(1.7)JF	1.8	1.9	1.9	2.1	2.0	(2.0)JH	1.7	1.7	1.9	1.8	1.7	1.8	1.9	1.9	1.8	1.9	2.1	(1.9)S	1.7	(1.8)S	(1.8)S
20	(1.7)S	1.6F	1.6F	1.7F	1.8F	1.9F	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9V	1.9	(1.9)P	1.8F	1.7F
21	1.7F	1.6F	1.8F	1.8F	1.8F	1.9	(2.2)S	2.1	2.2	1.9	1.8	1.8	1.9	1.8	1.8	1.9	1.8	1.8H	(1.9)S	(1.8)S	1.9	(1.8)S	(1.7)S	1.7
22	(1.7)S	1.7	1.7F	(1.8)JS	1.7	1.9	1.9	2.0	1.8	1.9	1.8	1.8	1.9	1.8	1.8	1.8	1.9	(1.9)F	(2.0)SF	(1.9)SF	1.8F	1.7F	(1.7)SF	1.7F
23	(1.8)SF	(1.8)S	1.8	1.8	1.7	1.8	2.1	2.1	2.1	2.0	2.0	1.8	1.9	1.9	1.9	1.9	1.8	1.9	2.0	1.8	(1.9)S	(1.9)S	1.8	1.8
24	1.8	(1.8)JS	1.9	(1.8)JS	(1.9)S	2.0	2.2	2.2	(2.1)S	2.0	1.9	1.8	1.8	1.9	1.8	1.8	1.8	1.8	2.0	(1.9)SP	(1.9)SP	(1.9)S	1.8	(1.9)JS
25	(1.9)JS	1.8	(2.0)JS	1.9	1.9	1.9	2.1	2.1	2.1	2.0	2.0	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	(1.8)S	(1.9)S	1.8	1.8	1.7F
26	1.7	(1.8)JS	1.8	1.7	(1.8)JS	1.9	2.2	2.1	2.0	1.9	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.9	1.9	(1.9)S	1.8	(1.8)JS	1.8	1.8
27	1.8	1.8	2.0	(1.7)S	1.7	1.8	2.0	2.0	(2.0)S	2.1	1.9H	2.0	1.9	1.8	1.8	1.9	1.9	1.9	1.9	(1.9)S	(1.9)S	1.9	1.8	1.8
28	(1.7)S	1.8	1.8	1.7	1.8	2.0	(2.1)JS	(2.1)S	2.0	2.1	1.9	1.8	1.7	1.7	1.8	1.8	1.8	1.8	1.9	(2.0)S	1.9	1.9	1.8	1.8
29	1.7	1.7	1.8	1.8	(1.9)S	1.9	(2.2)S	2.2	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	(1.9)SP	(1.9)S	1.9	1.8	1.8	1.7
30	1.7	1.7	1.7	1.8	1.8	1.8	2.1	(2.1)SF	2.1	1.9	1.9	(1.9)S	1.9	1.9	1.8	1.9	1.9	1.9	1.9	2.0	(1.9)JS	(1.8)JS	1.8	(1.8)S
31	1.7	(1.7)JS	1.8	1.8	1.9	(1.9)S	(2.1)P	2.1	2.0	2.0	2.0	1.9	2.0	1.8	1.8	1.8	1.8	1.8	(2.0)SP	2.0	2.0	1.9	1.7	1.7
Median	1.8	1.8	1.8	1.8	1.8	1.9	2.1	2.0	2.0	1.9	1.9	1.8	1.9	1.8	1.8	1.8	1.8	1.9	1.9	2.0	1.9	1.9	1.8	1.8
Count	31	31	31	30	31	31	31	31	31	31	30	31	31	30	29	30	31	31	31	31	31	31	31	31

* SUPPLEMENTARY DATA FROM FT. BELVOIR, LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 58

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

(M3000)F2 (Characteristic), ____ (Unit), August (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.J.S., B.E.B.

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11
1	2.7	2.8	2.8	2.7	2.9	3.1	3.3	3.2	3.1	(3.3)^{J}	2.7	(3.2)$^{J}_{S}$
2	2.8	2.7	2.6	2.8	2.5	2.7	2.7^{F}	2.7^{F}	2.6^{F}	2.9^{F}	2.9^{F}	2.7
3	2.4^{K}	2.6^{K}	2.2$^{F}_{K}$	2.0$^{F}_{K}$	2.2$^{F}_{K}$	2.6$^{F}_{K}$	2.7$^{F}_{K}$	3.0$^{F}_{K}$	G^{K}	G^{K}	G^{K}	G^{K}
4	*(2.4)$^{S}_{K}$	*2.6^{K}	*2.1^{K}	*N^{K}	*2.6^{K}	*K(2.3)$^{J}_{F}$	*2.7$^{F}_{K}$	*3.2^{F}	*(3.2)$^{F}_{S}$	*2.9	*3.1	*2.7
5	2.7^{F}	2.7^{F}	2.7^{F}	2.9^{F}	2.6^{F}	2.8^{F}	3.0	3.4	3.0	3.0	2.8	2.8
6	2.8^{F}	2.8^{F}	3.0	2.7^{F}	2.8^{F}	2.8^{F}	3.0	3.1	2.5	2.9	2.9	2.9
7	2.8	2.8	3.0	2.8^{F}	2.8^{F}	2.9^{F}	3.1	2.8^{K}	3.0^{K}	2.8^{K}	2.9^{K}	2.8^{K}
8	2.4$^{F}_{K}$	2.8$^{F}_{K}$	2.7$^{F}_{K}$	2.7$^{F}_{K}$	2.8$^{F}_{K}$	2.9$^{F}_{K}$	2.9^{K}	2.9^{K}	2.5^{K}	2.9^{K}	2.7$^{F}_{K}$	2.8$^{F}_{K}$
9	2.7$^{F}_{K}$	2.8$^{F}_{K}$	2.6$^{F}_{K}$	2.8$^{F}_{K}$	2.9$^{F}_{K}$	(2.8)$^{A}_{K}$	3.3^{K}	2.9$^{F}_{K}$	3.2	2.8^{F}	3.0	2.9
10	2.8$^{F}_{K}$	2.8$^{F}_{K}$	K(3.0)$^{S}_{F}$	3.0$^{F}_{K}$	2.7^{K}	2.8^{K}	2.9^{K}	2.9^{K}	2.6^{K}	2.7^{K}	2.4^{K}	G^{K}
11	2.8	2.8	2.7	2.9	2.9	3.0	3.4	3.2	3.2	3.0^{V}	3.0	3.0
12	2.8	2.8	2.9	2.7	2.9	3.3	3.3	3.1	3.3	3.2^{V}	3.2	2.8
13	2.8^{F}	2.7^{F}	(2.9)^{S}	(3.0)$^{S}_{F}$	2.9^{F}	3.2^{F}	3.1	3.0	3.1	3.0	3.1	2.9
14	2.7	2.8	2.8	2.7	2.6^{F}	2.8^{F}	2.9	2.9	2.8	2.6	3.0^{F}	2.6
15	K(2.7)$^{J}_{S}$	2.5$^{F}_{K}$	2.5$^{F}_{K}$	2.6$^{F}_{K}$	K(3.0)$^{S}_{F}$	2.9$^{F}_{K}$	3.0^{K}	3.0^{K}	G^{K}	G^{K}	G^{K}	G^{K}
16	*K(2.7)$^{J}_{S}$	*K(2.7)$^{J}_{S}$	*2.8^{K}	*(2.6)$^{P}_{K}$	*2.5$^{F}_{K}$	*2.8^{K}	*K(2.9)$^{F}_{J}$	*K(2.8)$^{F}_{S}$	2.6^{K}	2.5^{K}	2.6^{K}	2.8^{K}
17	2.6^{F}	2.7^{F}	2.7^{F}	2.7^{F}	(2.8)$^{J}_{S}$	(3.2)$^{J}_{S}$	(3.3)$^{J}_{S}$	(3.5)$^{J}_{S}$	3.2	3.0	2.9	2.8^{H}
18	2.6^{F}	2.6^{F}	(2.5)$^{S}_{F}$	2.5^{F}	2.5^{F}	2.7^{F}	3.0	3.0^{K}	3.0^{K}	2.7$^{F}_{K}$	A^{K}	G^{K}
19	(2.8)^{S}	2.8	(2.6)$^{S}_{F}$	2.6	2.8	2.9	3.1	3.0	(3.0)$^{J}_{H}$	2.6	2.7	2.9
20	(2.6)^{S}	2.5^{F}	2.4^{F}	2.5^{F}	2.8^{F}	2.8^{F}	3.0	2.9	2.9	2.9	2.9	2.8
21	2.6^{F}	2.5^{F}	2.7^{F}	2.7^{F}	2.7	2.8	(3.2)^{S}	3.1	3.2	2.8	2.8	2.8
22	(2.6)^{S}	2.6	2.6^{F}	(2.7)$^{J}_{S}$	2.7	2.8	3.0	3.1	2.8	2.9	2.8	2.8
23	(2.7)$^{S}_{F}$	(2.8)^{S}	2.8	2.7	2.6	2.8	3.1	3.1	3.1	3.0	3.1	2.8
24	2.7	(2.8)$^{J}_{S}$	2.9	(2.8)$^{J}_{S}$	(2.8)^{S}	3.0	3.3	3.2	(3.2)^{S}	3.0	2.8	2.8
25	(2.9)$^{J}_{S}$	2.8	(3.0)$^{J}_{S}$	2.9	2.8	2.9	3.2	3.1	3.1	3.0	2.9	2.8
26	2.6	(2.8)$^{J}_{S}$	2.7	2.7	(2.8)$^{J}_{S}$	2.8	3.2	3.2	3.0	2.9	2.8	2.8
27	2.7	2.8	3.0	(2.7)^{S}	2.7	2.7	3.0	3.1	(3.1)^{S}	3.2	2.9^{H}	3.0
28	(2.6)^{S}	2.8	2.8	2.6	2.8	2.9	(3.1)$^{J}_{S}$	(3.2)^{S}	3.0	3.1	2.9	2.8
29	2.6	2.6	2.7	2.7	(2.9)^{S}	2.9	(3.3)^{S}	3.2	3.0	2.9	2.9	2.8
30	2.6	2.6	2.6	2.8	2.7	2.8	3.2	(3.1)$^{S}_{F}$	3.1	2.9	2.9	(2.9)^{S}
31	2.6	(2.7)$^{J}_{S}$	2.7	2.7	2.9	(2.8)^{S}	(3.1)^{F}	3.2	3.0	3.0	3.0	2.9
Median	2.7	2.8	2.7	2.7	2.8	2.8	3.1	3.1	3.0	2.9	2.9	2.8
Count	31	31	31	30	31	31	31	31	31	31	30	31

Day	12	13	14	15	16	17	18	19	20	21	22	23
1	2.9	2.9	(2.8)$^{J}_{S}$	2.8	2.9	(2.8)^{J}	3.0	3.0	(3.1)$^{J}_{S}$	(2.9)$^{J}_{S}$	2.8	2.7
2	(2.8)^{P}	C	C	A	2.8	2.8	2.9	3.2^{K}	2.8^{K}	2.7^{K}	2.9^{K}	2.4^{K}
3	*G^{K}	*G^{K}	*A^{K}	*G^{K}	*2.2^{K}	*2.6^{K}	*2.6^{K}	*2.9^{K}	*2.7^{K}	*K(2.9)$^{J}_{S}$	*2.5$^{F}_{K}$	*K(2.4)$^{F}_{S}$
4	*(2.8)^{J}	2.8	2.7	2.8	2.6	2.7	2.9	2.9	2.9^{F}	(2.8)$^{J}_{P}$	2.8^{F}	2.8^{F}
5	2.8	2.9	2.9	2.9	2.9	2.9	3.0	3.0^{F}	2.8	2.9	2.9^{F}	2.8
6	2.9	2.9	2.9	2.9	2.9	3.0	3.1	3.0	3.0	2.8	2.8	2.8
7	2.7^{K}	2.6^{K}	2.7^{K}	2.9^{K}	2.9^{K}	2.8^{K}	2.9^{K}	2.8^{K}	2.7^{K}	2.6^{K}	2.6^{K}	2.5^{K}
8	3.1$^{F}_{K}$	(3.0)$^{P}_{K}$	2.8^{K}	2.8^{K}	2.9^{K}	2.9^{K}	3.0^{K}	3.1^{K}	2.8^{K}	K(3.1)$^{A}_{F}$	2.8$^{F}_{K}$	2.9$^{F}_{K}$
9	2.8	(2.9)^{J}	3.0	2.8	3.0	2.9	3.1	3.1	2.9	2.9^{K}	2.8^{K}	2.8$^{F}_{K}$
10	K(2.7)$^{S}_{F}$	2.7^{K}	2.6^{K}	2.8^{K}	3.0^{K}	2.9^{K}	2.8^{K}	2.9	2.9	3.0	3.0	2.8
11	2.8	3.0	3.0	3.0	3.1	3.1	2.9	3.0	3.0	3.1	3.0	2.9
12	3.0	3.0	3.0	3.1	2.9	2.9	2.9	3.1	3.0	3.1	3.0	2.8
13	3.0	3.0	3.1	3.0	3.0	(3.1)^{S}	3.1	3.0	2.9	2.8	2.5	2.7
14	3.1	2.8	3.0	3.1	2.7	(2.9)^{S}	2.9^{K}	2.8^{K}	(3.0)$^{S}_{K}$	K(3.0)$^{J}_{S}$	2.8^{K}	2.8^{K}
15	*2.4$^{F}_{K}$	*2.5$^{F}_{K}$	2.5$^{F}_{K}$	2.7^{K}	2.6^{K}	2.7^{K}	F(2.8)$^{S}_{K}$	(2.9)$^{S}_{K}$	(2.8)$^{S}_{K}$	*2.8^{K}	*2.9$^{F}_{K}$	*(2.8)$^{J}_{K}$
16	2.4^{K}	2.7^{K}	(2.7)$^{S}_{K}$	2.8^{K}	(2.8)$^{S}_{K}$	(2.9)$^{S}_{K}$	(2.9)$^{S}_{K}$	(3.0)$^{S}_{K}$	K(2.9)$^{J}_{S}$	(2.8)$^{S}_{K}$	2.7$^{F}_{K}$	2.6^{F}
17	2.8	2.9^{H}	2.9	2.8	*2.8	*2.8	2.8	3.0	2.9	3.1^{F}	(2.9)^{S}	2.9
18	2.5^{K}	2.6^{K}	2.6^{K}	2.6^{K}	2.7^{K}	2.6^{K}	2.9^{K}	(2.9)$^{S}_{K}$	2.6$^{F}_{K}$	(2.7)$^{J}_{F}$	2.7	(2.8)^{S}
19	2.7	2.6	2.8	2.9	2.8	2.8	2.9	3.0	(2.8)^{S}	2.6	(2.7)^{S}	(2.7)^{S}
20	2.8	2.8	2.8	2.8	2.7	2.8	2.8	2.8^{V}	2.9	(2.9)^{P}	2.7^{F}	2.7^{F}
21	2.8	2.8	2.8	2.8	2.8	2.8^{H}	(2.9)^{S}	(2.8)^{S}	2.9	(2.7)^{S}	(2.7)^{S}	2.6
22	2.9	2.7	2.8	2.8	2.8	(3.0)^{F}	(3.0)$^{S}_{F}$	(2.9)$^{S}_{F}$	2.8^{F}	2.6^{F}	(2.6)$^{S}_{F}$	2.7^{F}
23	2.9	2.8	2.8	2.8	2.8	2.8	3.0	2.8	(2.9)^{S}	(2.8)^{S}	2.8	2.8
24	2.8	2.8	2.8	2.8	2.8	2.8	2.9	(2.9)$^{S}_{P}$	(2.8)$^{S}_{P}$	(2.9)^{S}	2.8	(2.8)$^{J}_{S}$
25	2.7	2.8	2.8	2.8	2.7	2.9	2.9	(2.8)^{S}	(2.9)^{S}	2.8	2.8	2.7^{F}
26	2.8	2.8	2.8	2.8	2.8	2.9	2.9	(2.9)^{S}	2.8	(2.8)$^{J}_{S}$	2.7	2.8
27	2.8	2.7	2.8	2.9	2.9	2.9	2.9	(2.9)^{S}	(2.9)^{S}	2.9	2.8	2.7
28	2.6	2.7	2.8	2.8	2.7	2.8	2.9	(3.0)^{S}	2.9	2.8	2.8	2.7
29	2.8	2.7	2.8	2.7	2.8	2.8	(2.9)$^{S}_{P}$	(2.9)^{S}	2.9	2.8	2.8	2.6
30	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	(2.9)$^{J}_{S}$	(2.8)$^{J}_{S}$	2.8	(2.8)^{S}
31	3.0	2.8	2.7	2.8	2.8	2.8	(3.0)$^{S}_{P}$	2.9	2.9	2.9	2.7	2.7
Median	2.8	2.8	.8	2.8	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8
Count	31	30	29	30	31	31	31	31	31	31	31	31

* SUPPLEMENTARY DATA FROM FT. BELVOIR, LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 59

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

(M3000)F1 , ______ , August , 1949
(Characteristic) (Unit) (Month)

Observed at Washington, D.C.

Lat 39.0°N , Long 77.5°W

75°W Mean Time

National Bureau of Standards
(Institution)

Scaled by: J.J.S., B.E.B.

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q	Q	4.0	3.4	3.5	L	3.1	3.7	3.6	B	B	3.4	Q					
2							L	3.3F	3.6F	3.6	(3.5)P	3.6	(3.7)P	C	C	4.1	3.4	(3.5)A	A					
3							QK	3.2FK	3.6A	4.1K	(3.8)PK	(3.9)PK	*(4.0)BK	*(3.9)PK	*AK	*3.8K	*3.4K	*3.1K	*3.0K					
4							*QK	*Q	*3.5F	*3.9	*3.8	*3.5	*3.8	3.2	3.1	3.6	3.2	3.2	L					
5							Q	Q	L	3.5	A	B	3.9	(3.5)S	3.6	3.6	3.4	L	L					
6							L	3.3	3.4	3.7	3.7	3.6	3.5	3.6	3.5	3.5	3.6	L	Q					
7							L	3.2K	3.3K	3.8K	3.7K	3.5K	(3.8)SK	3.7K	3.5K	3.5K	3.6K	3.4K	3.3K					
8							QK	3.2K	3.4K	3.6K	(3.4)BK	3.5K	3.6K	AK	AK	3.4K	4.1K	3.8K	AK					
9							QK	3.3K	3.7	4.1	3.1	A	3.6	3.7	3.6	3.5	3.4	3.4	A					
10							QK	3.3K	3.3K	3.6K	3.9K	3.8K	3.7K	3.7K	3.8K	3.7K	3.4K	3.4K	3.2K					
11							Q	*L	L	3.6	3.7	3.4H	3.6	3.7H	3.7	3.5	3.7	L	L					
12							Q	L	3.4	3.7H	3.9	3.6H	3.8	3.8	4.0	3.6	3.3	L	Q					
13							L	L	3.3	3.7	3.7	3.2	3.7	N	(3.6)A	(4.1)S	4.0	4.2	L					
14							Q	3.2	3.4	3.7	3.5	3.5	3.8	3.6	A	L	3.2	L	LK					
15							LK	3.5K	NK	(3.7)HK	4.0K	NK	*3.7K	*3.5K	3.4K	3.6K	3.4K	3.1FK	AK					
16							*QK	*(3.2)PK	3.5K	3.6K	3.8K	3.2K	3.8K	3.7HK	(3.6)SK	3.8K	3.2K	LK	LK					
17							Q	L	L	(3.4)P	A	(3.7)P	3.6	(3.5)P	(3.4)P	(3.5)P	*3.4L	*(3.5)L	Q					
18							L	LK	(3.2)PK	3.4K	3.8FK	3.1HK	3.7K	AK	AK	3.5K	(3.2)PK	3.2K	LK					
19							Q	L	3.7	3.6	3.6H	3.5H	3.8H	3.4H	3.4H	3.4	3.7	L	L					
20							L	A	(3.3)P	(3.3)P	L	L	(3.3)P	3.3H	3.4	3.8	(3.5)P	L	Q					
21							Q	L	L	L	L	(3.4)P	(3.7)P	3.4	(3.7)P	(3.2)P	L	L	Q					
22							Q	L	(3.1)P	(3.9)P	4.1	(3.1)P	3.4	(3.4)P	(3.1)P	3.4	(3.1)P	L	L					
23							Q	L	L	L	(3.7)P	L	(3.4)P	(3.2)P	(3.2)P	L	L	L	L					
24							Q	L	L	L	(4.1)P	L	3.5	(3.6)P	(3.3)P	(3.2)P	(3.8)P	(3.6)P	L					
25							L	L	L	L	(3.6)P	(3.4)P	(3.2)P	(3.3)P	(3.5)P	3.7	L	L	L					
26							Q	L	L	(3.3)P	3.4	(3.1)P	(3.1)P	(3.5)P	(3.5)P	(3.8)P	(3.4)P	(3.6)P	L					
27							L	L	L	(3.3)P	3.5	(3.5)P	L	(3.4)P	(3.3)P	L	L	L	Q					
28							Q	L	L	L	(3.5)P	(3.3)P	(3.3)P	(3.2)P	(3.3)P	(3.4)P	(3.3)P	L	L					
29							Q	L	L	L	L	(3.3)P	(3.4)P	(3.7)P	(3.4)P	L	L	L	L					
30							Q	L	L	L	L	(3.4)P	(3.4)P	(3.2)P	(3.4)P	3.7	L	L	L					
31							Q	L	(3.4)P	L	L	(3.5)P	(3.4)P	3.5	(3.2)P	(3.4)P	L	L	L					
Median							—	3.2	3.4	3.6	3.7	3.5	3.6	3.5	(3.4)	3.6	3.4	3.4	—					
Count								10	18	23	24	24	30	27	26	26	23	14	3					

* SUPPLEMENTARY DATA FROM FT. BELVOIR, LAT. 38.7°N, LONG. 77.1°W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

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U. S. GOVERNMENT PRINTING OFFICE 1946 O - 703319

Form adopted June 1946

TABLE 60

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

(M1500)E (Characteristic), ____ (Unit), August (Month), 1949

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.J.S., B.E.B.

Calculated by: B.E.B., N.C.H., J.M.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	4.2	4.1	4.1	$(4.3)^{S}$	4.4	4.3	4.3	B	B	A	4.6	4.8				
2							4.3^{F}	4.4	4.3	4.4	4.4	4.5	A	C	C	4.1	4.2	4.3	4.4					
3							A^{K}	4.2^{K}	4.4^{K}	4.4^{K}	4.4^{K}	3.9^{K}	*3.9^{K}	*$(4.2)^{P}_{K}$	*B^{K}	*4.3^{K}	*4.1^{K}	*$(4.4)^{S}_{K}$	*4.2^{K}					
4						*4.7^{K}	*3.6^{K}	*4.1	*4.2	*A	*A	*A	*B	4.1	4.3	4.1	4.4	A	$(4.4)^{A}$					
5							3.9	3.8	4.1	A	A	A	4.1	4.3	4.6	4.1	4.1	3.9	4.0	A				
6							4.3	$(4.4)^{A}$	4.3	4.5	A	A	4.1	4.2	4.1	4.0	4.1	4.0	B	A				
7							4.3	4.5^{K}	4.5^{K}	4.2^{K}	4.1^{K}	$(4.1)^{P}_{K}$	$(4.2)^{P}_{K}$	3.9^{K}	4.1^{K}	4.0^{K}	4.2^{K}	4.1^{K}	4.0^{K}					
8							4.3^{K}	A^{K}	3.9^{K}	4.3^{K}	4.5^{K}	B^{K}	B^{K}	4.2^{K}	3.9^{K}	4.0^{K}	3.8^{K}	4.1^{K}	4.5^{K}					
9							A^{K}	4.4^{K}	4.3	4.1	4.4	4.5	4.5	A	A	4.3	4.3	4.1	$(4.4)^{A}$					
10							4.4^{K}	4.4^{K}	4.1^{K}	A^{K}	$(4.3)^{A}_{K}$	A^{K}	3.9^{K}	4.1^{K}	4.1^{K}	4.1^{K}	4.4^{K}	4.1^{K}	*4.1^{K}					
11							*3.8	4.1	*4.1	4.5	4.1	3.9	3.9	$(4.1)^{A}$	4.2	4.2	4.1	3.9	$(4.1)^{A}$					
12							A	4.4	$(3.9)^{A}$	A	4.1	A	4.1	3.6	3.8	4.1	4.1	4.0	$(4.4)^{A}$					
13							4.2	4.1	4.2	A	4.5	4.5	4.4	4.6	A	4.1	3.8	3.8	4.3					
14							4.2	4.4	4.2	4.2	4.1	4.2	4.0	3.9	4.0	4.3	$(3.9)^{A}$	A	4.4^{K}					
15							A^{K}	4.4^{K}	4.1^{K}	3.9^{K}	4.4^{K}	4.4^{K}	*4.0^{K}	*3.9^{K}	3.7^{K}	3.9^{K}	4.2^{K}	3.9^{K}	$(4.0)^{A}_{K}$					
16							A^{K}	*4.2^{K}	A^{K}	$(4.3)^{A}_{K}$	4.3^{K}	$(4.1)^{P}_{K}$	3.8^{K}	4.0^{K}	4.0^{K}	4.2^{K}	3.9^{K}	4.0^{K}	4.3^{K}					
17							3.7	4.3	4.1	4.3	4.1	4.0	4.0	4.0	4.0	3.9	*4.1	*4.3	4.5					
18							4.0	4.0^{K}	4.2^{K}	4.2^{K}	A^{K}	A^{K}	4.2^{K}	3.7^{K}	4.0^{K}	4.0^{K}	4.1^{K}	3.9^{K}	4.0^{K}					
19							3.9	4.0	4.1	4.1	4.1	3.9	4.0	A	3.8	3.8	4.0	3.9	4.3					
20							4.0	A	A	A	4.0	4.0	3.9	3.8	3.9	4.3	4.2	4.0	4.6					
21							4.2	4.0	4.4	4.0	3.9	3.8	3.8	3.8	3.8	4.1	4.0	3.9	$(4.1)^{A}$					
22							3.7	3.8	4.2	4.0	3.8	3.6	3.8	3.8	4.0	3.9	4.1	3.9	4.3					
23							4.0	4.3	4.1	4.1	4.0	4.1	3.9	4.0	4.1	4.1	4.0	4.1	4.5					
24							4.2	4.1	4.0	4.2	4.2	4.0	4.2	3.8	3.8	4.3	4.3	4.0	A					
25							4.8	4.1	4.2	$(4.1)^{A}$	$(4.0)^{A}$	$(4.1)^{A}$	3.8	3.9	4.5	A	3.9	4.3	4.6					
26							A	$(3.9)^{A}$	3.9	4.1	4.3	4.4	A	$(3.6)^{A}$	3.7	3.8	3.9	3.9	3.7					
27							3.5	4.0	$(4.4)^{A}$	4.2	4.0	3.8	3.8	4.1	3.8	3.8	4.3	$(4.3)^{A}$	4.3					
28							4.2	4.3	$(4.1)^{A}$	A	$(3.9)^{A}$	$(3.8)^{A}$	3.9	3.9	$(3.9)^{A}$	A	4.2	3.9	A					
29							3.5	4.1	4.1	4.1	4.2	4.0	3.9	4.1	3.8	3.9	4.1	4.1	4.1					
30							3.5	4.1	4.3	4.4	4.0	3.9	3.9	3.9	3.9	4.0	4.2	4.2	4.0					
31							4.0	4.0	4.1	4.2	4.3	4.1	3.9	3.9	4.1	4.1	4.0	4.0	3.8					
Median						—	4.0	4.1	4.2	4.2	4.1	4.0	3.9	4.0	4.0	4.1	4.1	4.0	4.3	—				
Count						1	24	28	29	24	27	24	27	28	27	28	30	28	28	1				

* SUPPLEMENTARY DATA FROM FT BELVOIR, LAT. 38.7°N, LONG. 77.1°W.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

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Table 61

Ionospheric Storminess at Washington, D. C.

August 1949

Day	Ionospheric character* 00-12 GCT	Ionospheric character* 12-24 GCT	Principal storms Beginning GCT	Principal storms End GCT	Geomagnetic character** 00-12 GCT	Geomagnetic character** 12-24 GCT
1	1	3			1	2
2	2	1			3	3
3	5	6	0000	----	6	3
4	6	3	----	1200	5	4
5	1	1			3	4
6	1	2			2	2
7	1	4	1200	----	1	3
8	4	4	----	----	4	2
9	4	2	----	1300	2	2
10	4	5	0200	2400	2	2
11	2	1			1	1
12	1	2			2	1
13	1	2			2	2
14	2	3	2300	----	4	3
15	4	6	----	----	4	2
16	4	5	----	----	2	1
17	3	1	----	0400	2	3
18	3	5	1200	----	2	3
19	2	3	----	0200	2	2
20	2	1			3	3
21	2	1			2	2
22	2	3			2	2
23	1	2			2	1
24	1	0			1	0
25	0	1			0	1
26	1	3			1	1
27	0	2			3	2
28	1	2			2	1
29	2	1			2	2
30	2	1			2	1
31	2	1			1	2

*Ionosphere character figure (I-figure) for ionospheric storminess at Washington, D. C., during 12-hour period, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

**Average for 12 hours of Cheltenham, Maryland, geomagnetic K-figures on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

----Dashes indicate continuing storm.

Table 62

Sudden Ionosphere Disturbances Observed at Washington, D. C.

August 1949

1949 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
August 1	1952	2215	Ohio, D.C., New Brunswick	0.0	
2	1520	1540	Ohio, D.C., England	0.03	
5	2042	2110	Ohio, D.C., England	0.0	
6	1813	1845	Ohio, D.C.	0.1	
6	2251	2345	Ohio, D.C.	0.01	
16	1157	1220	Ohio, England	0.2	
16	1745	1820	Ohio, D.C., England, New Brunswick	0.3	Solar flare*** 1755
19	1843	1905	Ohio, D.C., England	0.1	Solar flare*** 1900
19	2110	2210	Ohio, D.C., England	0.0	Terr.mag.pulse** 2113-2210 Solar flare*** 2112
20	1200	1220	England	0.1	
20	1525	1600	Ohio, D.C., England	0.03	Terr.mag.pulse** 1525-1527 Solar flare*** 1530
22	1415	1440	Ohio, D.C.	0.2	Terr.mag.pulse** 1416-1418 Solar flare*** 1416
25	1543	1620	Ohio, D.C., England	0.05	Solar flare*** 1540
25	2025	2050	Ohio, D.C., England, New Brunswick	0.05	Solar flare*** 2015
31	1936	2020	Ohio, D.C., Canal Zone, England, New Brunswick	0.0	Solar flare*** 1940

*Ratio of received field intensity during SID to average field intensity before and after, for station W8XAL, 6080 kilocycles, 600 kilometers distant, for all SID except the following: Station GIH, 13525 kilocycles, received in New York, 5340 kilometers distant, was used for the SID on August 20.

** As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

*** Time of observation at McMath-Hulbert Observatory, Michigan.

Table 63

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief, Cable and Wireless, Ltd., as Observed in England

1949 Day	GCT Beginning	GCT End	Receiving station	Location of transmitters	Other phenomena
July 27	1227	1240	Brentwood	Barbados, Canary Is., Greece, Iran, Madagascar, Palestine, Portugal, Spain, Switzerland, Syria, Yugoslavia	Terr.mag. pulse* 1222-1230
28	1120	1140	Brentwood	Bahrein I., Barbados, Greece, India, Kenya, Palestine, Southern Rhodesia, Spain, Switzerland, Uruguay, U.S.S.R., Yugoslavia, Zanzibar	
29	1415	1445	Brentwood	Bahrein I., Barbados, Belgian Congo, Bulgaria, Chile, Colombia, Eritrea, Greece, Iran, Kenya, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Uruguay, U.S.S.R., Venezuela, Yugoslavia, Zanzibar	Terr.mag. pulse* 1411-1430
29	1415	1445	Somerton	Argentina, Australia, Brazil, Canada, Ceylon, Gold Coast, New York, Union of S. Africa	Terr.mag. pulse* 1411-1430
30	0730	0750	Brentwood	Afghanistan, Bahrein I., Greece, India, Iran, Palestine, Spain, U.S.S.R., Yugoslavia	
30	0730	0845	Somerton	Ceylon, China, India	
31	0830	0845	Brentwood	Greece, India, Palestine, Southern Rhodesia, Spain, U.S.S.R., Zanzibar	
31	1450	1615	Brentwood	Barbados, Spain, U.S.S.R.	Solar flare** 1505
31	1515	1545	Somerton	Canada, New York	Solar flare** 1505
August 5	0720	0750	Brentwood	Afghanistan, Bahrein I., Belgian Congo, Canary Is., French Equatorial Africa, Greece, India, Iran, Kenya, Palestine, Portugal, Southern Rhodesia, Spain, Syria, Trans-Jordan, U.S.S.R., Yugoslavia	
August 5	0805	***	Brentwood	Afghanistan, Austria, Bahrein I., Belgian Congo, Canary Is., Eritrea, French Equatorial Africa, Greece, India, Iran, Kenya, Madagascar, Palestine, Portugal, Southern Rhodesia, Spain, Syria, Trans-Jordan, Turkey, U.S.S.R., Yugoslavia, Zanzibar	
5	0805	1120	Somerton	Aden, Argentina, Australia, Canada, Ceylon, China, Egypt, Gold Coast, India, New York, Nigeria, Union of S. Africa	
5	1040	1120	Brentwood	Barbados, Belgian Congo, Bulgaria, Canary Is., Greece, India, Kenya, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Turkey, U.S.S.R., Yugoslavia	
16	1150	1215	Brentwood	Austria, Bahrein I., Barbados, Belgian Congo, Canary Is., Chile, Greece, India, Iran, Kenya, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Uruguay, U.S.S.R., Yugoslavia, Zanzibar	
17	0643	0705	Brentwood	Afghanistan, Bahrein I., Belgian Congo, Eritrea, India, Iran, Kenya, Palestine, Portugal, Southern Rhodesia, Syria, Trans-Jordan, U.S.S.R.	
20	1205	1225	Brentwood	Belgian Congo, Greece, India, Iran, Malta, Southern Rhodesia, Spain, U.S.S.R.	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.
**Time of observation at McMath-Hulbert Observatory, Michigan.
***Incomplete recovery of SID.

Table 64

Sudden Ionosphere Disturbances Reported by International Telephone and Telegraph Corporation, as Observed at Platanos, Argentina

1949 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
July 29	1420	1450	Bolivia, Brazil, Chile, Colombia, Cuba, Denmark, England, Germany, New York, Peru, Switzerland, Venezuela	Terr.mag. pulse* 1411-1430
31	1510	1610	Brazil, Chile, France, New York, Peru, Switzerland	Solar flare** 1505

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.
**Time of observation at McMath-Hulbert Observatory, Michigan.

Table 65

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc., as Observed at Point Reyes, California

1949 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
August 6	2250	2400	Australia, Hawaii, Japan, Philippine Is.	
19	2110	2130	Australia, China, Hawaii, Japan, Philippine Is.	Solar flare* 2112
30	0110	0245	Australia, China, Chosen, Hawaii, Japan, Java, New York, Philippine Is.	
September 5	0210	0240	Australia, China, Japan, Java, Philippine Is.	
9	0052	0145	Australia, China, Chosen, Hawaii, Japan, Java, Philippine Is.	

*Time of observation at McMath-Hulbert Observatory, Michigan.

Note: Observers are invited to send to the CRPL information on times of beginning and end of sudden ionosphere disturbances for publication as above. Address letters to the Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Table 66

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and CRPL Probable Disturbed Period Forecasts)
July 1949

Day	North Atlantic: Quality figure 01-12 GCT	Quality figure 13-24 GCT	CRPL* Warning 01-12 GCT	CRPL* Warning 13-24 GCT	CRPL** Forecast of probable disturbed periods	Geo-mag-netic K_{Ch} 01-12 GCT	Geo-mag-netic K_{Ch} 13-24 GCT	North Pacific: Quality figure 01-12 GCT	Quality figure 13-24 GCT	CRPL* Warning 01-12 GCT	CRPL* Warning 13-24 GCT	CRPL** Forecast of probable disturbed periods	Geo-mag-netic K_{Ch} 01-12 GCT	Geo-mag-netic K_{Ch} 13-24 GCT
1	6	5			X	2	2	6	7			X	2	2
2	7	6				2	1	6	7				2	1
3	7	6				1	2	7	7				1	2
4	7	7				1	1	6	6				1	1
5	7	6				1	1	6	6				1	1
6	7	7				1	1	6	7				1	1
7	7	6				2	2	7	7				2	2
8	5	7				2	3	7	7				2	3
9	7	7				3	1	6	7				3	1
10	7	7				1	2	6	7				1	2
11	7	7				1	1	6	7				1	1
12	7	7				1	3	7	7				1	3
13	5	6				3	2	6	6				3	2
14	6	6				2	2	6	7				2	2
15	6	7				0	1	6	7				0	1
16	7	6				1	4	6	5				1	4
17	6	5				3	2	7	6				3	2
18	6	6				2	4	7	7				2	4
19	5	5				4	3	6	7				4	3
20	7	6				2	2	6	7				2	2
21	7	6				1	2	6	7				1	2
22	7	6				2	3	6	6				2	3
23	7	6				3	3	6	6				3	3
24	6	6				2	2	7	8				2	2
25	6	5				3	3	6	7				3	3
26	7	6				1	1	6	7				1	1
27	7	6				0	0	7	7				0	0
28	7	6				0	1	6	6				0	1
29	7	6				1	2	6	7				1	2
30	7	6				2	2	6	7				2	2
31	6	5			X	2	2	7	7			X	2	2
Score:														
H			0		0					0		0		
M			0		0					0		0		
G			31		29					31		29		
(S)			0		2					0		0		
S			0		0					0		2		

Quality Figure Scale:
- 1 - Useless
- 2 - Very poor
- 3 - Poor
- 4 - Poor to fair
- 5 - Fair
- 6 - Fair to good
- 7 - Good
- 8 - Very good
- 9 - Excellent

Symbols:
- X Warning given or probable disturbed date
- H Quality 4 or worse on day or half day of warning
- M Quality 4 or worse on day or half day of no warning
- G Quality 5 or better on day of no warning
- (S) Quality 5 on day of warning
- S Quality 6 or better on day of warning
- ( ) Quality 4 or worse (disturbed)

Geomagnetic K_{Ch} on the standard scale of 0 to 9, 9 representing the greatest disturbance.

*Broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half day as broadcast.

**In addition to dates marked X, the following was designated as a probable disturbed day on forecasts more than eight days in advance of said date: July 2.

Table 67

American and Zürich Provisional Relative Sunspot Numbers

August 1949

Date	R_A*	R_Z**	Date	R_A*	R_Z**
1	174	161	17	228	175
2	172	171	18	235	168
3	163	127	19	220	162
4	132	114	20	224	192
5	125	109	21	236	151
6	78	88	22	242	198
7	55	59	23	230	189
8	52	50	24	217	169
9	56	45	25	206	158
10	37	34	26	200	163
11	22	17	27	197	165
12	66	56	28	210	163
13	128	82	29	210	155
14	163	108	30	197	133
15	188	155	31	218	168
16	195	174	Mean:	163.7	130.9

*Combination of reports from 49 observers; see page 8.
**Dependent on observations at Zürich Observatory and its stations at Locarno and Arosa.

Table 68a

Coronal observations at Climax, Colorado (5303A), east limb

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Aug. 1.9	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	4	4	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
2.8	-	-	-	-	-	-	-	-	-	-	5	6	7	8	7	9	10	10	10	9	9	8	8	5	6	3	-	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	4	6	6	7	11	12	18	18	13	12	11	11	3	4	5	5	3	-	-	-	-	-	-	-	-	-	-	-
4.7	-	1	2	1	1	2	3	5	6	5	11	9	14	20	27	27	25	13	13	14	14	8	2	3	3	3	3	2	2	2	2	1	-	-	-	-	-
5.6	-	-	-	-	-	-	-	-	-	2	3	4	6	9	12	15	15	5	4	4	5	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.8	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7.7	-	-	-	-	-	-	-	-	-	-	4	5	7	8	12	12	10	3	2	2	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	3	5	5	3	4	7	8	9	10	10	7	8	6	5	5	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-
9.8	-	-	-	-	-	-	-	3	5	7	8	10	11	13	13	13	11	10	10	11	11	13	10	5	5	5	3	1	-	-	-	-	-	-	-	-	-
10.7	-	-	-	-	-	-	-	-	3	6	8	10	13	18	17	15	11	10	10	11	13	13	10	5	3	1	-	-	-	-	-	-	-	-	-	-	-
11.6	-	-	-	-	-	-	-	1	2	3	5	9	11	14	26	22	17	16	16	18	21	12	8	10	9	5	1	-	-	-	-	-	-	-	-	-	-
12.9	-	-	-	-	-	-	-	-	2	3	5	5	7	9	8	9	13	20	19	19	13	18	15	13	11	7	3	-	-	-	-	-	-	-	-	-	-
13.7	-	-	-	-	-	-	-	-	-	3	4	7	8	10	15	22	20	14	12	12	15	22	13	10	9	4	3	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	2	3	3	4	9	13	14	17	28	28	23	20	18	25	30	20	11	10	9	5	4	2	1	-	-	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	2	3	3	5	6	9	11	19	19	18	16	14	15	18	13	10	4	5	5	4	2	1	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	-	2	3	4	10	12	11	15	28	20	21	18	14	14	15	13	10	8	9	7	2	-	-	-	-	-	-	-	-	-
17.6	-	-	-	-	-	-	-	-	-	2	4	6	10	13	16	22	20	15	15	13	12	10	9	8	6	4	2	-	-	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	4	7	11	13	14	12	10	9	10	16	13	14	10	8	5	3	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	4	9	10	13	12	14	11	9	10	23	20	23	15	11	7	2	-	-	-	-	-	-	-	-	-	-
20.6	-	-	-	-	-	-	-	-	-	-	-	-	4	7	10	9	9	7	6	5	13	15	19	19	12	5	1	-	-	-	-	-	-	-	-	-	-
21.6	-	-	-	-	-	-	-	-	-	-	-	-	3	8	15	15	10	5	9	15	16	19	20	26	14	8	2	-	-	-	-	-	-	-	-	-	-
22.6	-	-	-	-	-	-	-	-	-	-	-	3	11	18	17	10	8	9	12	13	14	16	18	13	3	-	-	-	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	-	-	-	-	3	7	15	18	13	10	10	15	14	13	13	14	13	10	5	2	-	-	-	-	-	-	-	-	-
24.7	-	-	-	-	-	-	-	2	2	2	2	3	3	13	16	29	32	16	16	25	30	15	15	14	13	12	10	5	2	1	-	-	-	-	-	-	-
25.9	-	-	-	-	-	-	-	-	-	-	-	-	3	5	10	13	17	15	11	12	11	10	12	11	7	6	5	3	2	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	10	15	13	13	12	9	13	15	13	6	9	9	4	2	-	-	-	-	-	-	-
27.6	-	-	-	-	-	-	2	2	3	3	2	2	2	5	9	10	14	14	13	14	12	11	10	14	11	3	4	4	3	2	1	-	-	-	-	-	-
29.6	-	-	-	-	-	-	-	-	-	-	-	-	-	4	7	10	11	10	9	10	14	13	10	5	3	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	-	-	-	2	3	7	10	12	12	12	11	5	10	13	13	12	5	2	-	-	-	-	-	-	-	-	-	-	-

Table 69a

Coronal observations at Climax, Colorado (6374A), east limb

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Aug. 1.9	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	1	1	1	1	-	-	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	10	6	7	1	1	1	2	3	3	1	1	-	-	-	-	-	-	-	-	-	-	-
4.7	-	-	-	-	-	-	-	-	-	-	-	-	1	8	14	13	14	8	2	1	-	1	1	-	-	1	1	1	-	-	-	-	-	-	-	-	-
5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	8	11	3	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.8	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.6	1	1	1	1	1	1	1	1	1	1	1	-	-	-	2	10	13	7	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	5	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	3	1	-	-	-	-	1	2	2	1	1	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	1	1	1	1	1	1	2	3	8	7	1	-	-	1	5	1	-	-	-	-	1	1	1	-	-	-	-	-	-
16.6	1	1	1	1	1	1	1	1	1	1	1	1	1	2	5	5	3	2	1	-	-	-	1	2	1	-	-	-	1	2	2	1	1	-	-	-	-
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	9	11	10	8	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	13	12	10	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
19.6	1	1	1	1	1	1	1	1	1	1	1	2	5	10	8	11	9	1	1	1	5	4	3	2	1	1	1	1	1	1	1	1	1	1	1	-	-
20.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	7	7	1	-	-	-	1	1	1	1	4	1	-	-	-	-	-	-	-	-	-	-	-
21.6	1	1	1	1	1	1	1	1	1	1	-	-	1	2	5	11	8	1	-	-	2	7	1	2	9	1	1	1	-	-	-	-	-	-	-	-	-
22.6	-	-	-	-	-	1	1	1	1	-	-	-	1	1	11	13	14	1	-	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	-	-	-	1	2	3	8	15	10	1	1	11	2	1	3	4	1	1	-	-	-	-	-	-	-	-	-	-	-
24.7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	18	16	8	1	10	17	-	12	1	1	1	1	1	2	2	1	1	1	1	-	-	-
25.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	10	10	11	1	1	9	7	7	9	1	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	10	11	1	3	5	1	6	14	1	-	-	-	-	1	1	1	1	1	-	-	-
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	2	11	4	3	1	1	-	-	-	1	2	3	3	1	1	-	-	-
29.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	3	7	10	12	1	-	5	10	1	1	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	-	-	-	-	1	2	4	8	11	12	12	5	6	13	12	14	1	-	-	-	-	-	-	-	-	-	-	-	-

Table 68b

Coronal observations at Climax, Colorado (5303A), west limb

Date	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Aug. 1.9	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.8	-	-	-	-	-	-	-	-	-	3	6	7	7	7	9	10	10	11	10	11	12	15	14	10	7	4	2	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	2	3	8	12	12	13	13	12	13	14	14	15	19	17	13	10	5	-	-	-	-	-	-	-	-	-	-	-
4.7	-	-	-	-	-	-	-	-	-	2	4	10	11	13	13	14	13	13	14	24	16	20	21	18	14	10	2	-	-	-	-	-	-	-	-	-	-
5.6	-	-	-	-	-	-	-	-	2	3	3	8	12	14	15	13	18	14	8	9	11	14	15	13	12	9	3	-	-	-	-	-	-	-	-	-	-
6.8	X	X	X	X	X	X	X	X	X	3	3	4	11	13	15	15	13	11	10	7	7	12	14	13	13	11	1	-	-	-	-	-	-	-	-	-	-
7.7	-	-	-	-	-	-	-	-	-	3	5	10	14	15	23	25	18	14	10	9	10	15	13	13	5	4	3	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	3	4	5	8	11	15	18	17	14	11	9	9	10	12	13	9	5	1	-	-	-	-	-	-	-	-	-	-	-
9.8	-	-	-	-	-	-	-	-	-	2	3	9	10	12	14	15	16	18	15	8	7	13	11	9	8	3	1	-	-	-	-	-	-	-	-	-	-
10.7	-	-	-	-	-	-	-	1	2	4	9	11	13	12	13	17	30	22	17	26	22	15	10	9	6	3	-	-	-	-	-	-	-	-	-	-	-
11.6	-	-	-	-	-	-	-	-	2	2	5	8	10	9	10	11	13	14	12	16	21	18	9	5	3	2	1	-	-	-	-	-	-	-	-	-	-
12.9	-	-	-	-	-	-	-	-	-	2	3	3	3	10	13	11	13	14	13	12	15	13	9	9	9	8	6	2	-	-	-	-	-	-	-	-	-
13.7	-	-	-	-	-	-	-	-	-	3	4	4	3	4	8	10	11	11	10	9	10	6	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	2	4	6	8	9	9	9	10	13	14	13	14	14	13	14	11	10	12	9	8	7	6	7	7	5	3	1	-	-	-	-
15.6	-	-	-	-	-	-	2	3	4	5	3	3	4	5	10	12	13	13	10	7	10	10	10	9	5	3	2	2	2	2	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	2	3	3	3	2	2	4	6	14	12	12	10	9	10	14	13	11	10	8	4	4	3	4	3	2	-	-	-	-	-
17.6	-	-	-	-	-	-	-	3	4	4	2	2	3	4	7	8	10	9	8	8	12	24	20	15	12	6	3	2	2	2	1	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	4	5	5	8	11	14	14	10	5	2	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	2	2	3	3	3	2	-	4	5	5	7	13	14	15	14	11	8	5	3	4	4	2	-	-	-	-	-	-
20.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	6	6	10	9	5	1	-	-	-	-	-	-	-	-	-	-	-
21.6	-	-	-	-	-	-	-	-	-	-	2	3	4	5	7	8	9	10	7	12	18	11	13	12	9	4	2	1	-	-	-	-	-	-	-	-	-
22.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	11	13	10	8	14	13	12	11	11	6	2	-	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	2	2	3	4	4	5	6	10	11	13	14	13	13	14	14	15	11	5	3	2	1	-	-	-	-	-	-	-	-
24.7	-	-	-	-	-	-	-	-	3	4	5	5	7	9	11	12	13	12	12	17	18	15	14	13	11	7	3	2	-	-	-	-	-	-	-	-	-
25.9	-	-	-	-	-	-	-	-	-	-	-	-	2	4	8	9	9	8	9	13	14	14	12	10	5	1	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	2	5	7	10	13	20	12	8	10	20	30	31	32	20	12	8	5	3	2	-	-	-	-	-	-	-	-
27.6	-	-	-	-	-	-	-	-	-	-	3	3	6	10	13	16	17	13	10	15	22	20	20	18	8	5	3	-	-	-	-	-	-	-	-	-	-
29.6	-	-	-	-	-	-	-	-	-	-	-	-	3	8	10	10	10	9	11	10	11	12	13	11	6	3	1	-	-	-	-	-	-	-	-	-	-
30.7	-	X	X	X	X	-	-	-	3	3	3	3	2	5	10	10	10	6	9	13	12	17	27	25	6	3	-	-	-	-	-	-	-	-	-	-	-

Table 69b

Coronal observations at Climax, Colorado (6374A), west limb

Date	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Aug. 1.9	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.8	-	-	-	-	-	-	-	-	-	1	1	1	1	1	-	5	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
4.7	-	-	-	-	-	-	1	1	1	1	1	1	1	2	1	-	-	-	-	5	10	15	7	2	2	1	1	1	1	-	-	-	-	-	-	-	-
5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	5	1	-	2	10	7	10	1	-	-	-	-	-	-	-	-	-	-	-	-
6.8	X	X	X	X	X	X	X	X	X	-	1	1	2	4	4	7	10	6	1	1	3	11	10	7	5	1	-	-	-	-	-	-	-	-	-	-	-
7.7	-	-	-	-	-	-	1	1	1	1	1	-	-	5	5	4	4	2	1	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	10	5	6	8	6	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	10	5	1	14	12	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	14	11	10	11	8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	9	9	8	3	1	-	-	-	-	-	-	-	-	-	-	-	-	1
12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	1	10	1	-	-	1	2	5	7	7	3	1	-	-	-	-	-	-	-	-	-	-	-	-
13.7	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	3	4	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	5	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	1	1	1	1	-	-	-	1	2	7	8	5	2	3	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	1
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	4	3	1	1	6	11	10	1	-	-	-	-	-	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	4	6	10	1	-	-	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	8	10	2	1	-	-	-	-	-	-	-	-	-	-	1
20.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	-	-	-	-	-	-	-	-	-	-	-
21.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	3	-	13	10	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1
22.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	2	-	4	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7	10	5	7	8	8	6	1	-	-	-	-	-	-	-	-	-	-	-	-	-
24.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	13	11	10	8	1	-	-	-	-	-	-	-	-	-	-	-	-	1
25.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	1	5	9	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	1	2	2	3	3	1	1	-	-	1	10	1	-	-	1	10	13	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27.6	-	-	-	-	-	-	-	-	1	2	1	1	1	-	-	1	1	-	-	1	10	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
29.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	4	4	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	X	X	X	X	-	-	-	-	-	-	-	-	1	1	1	5	4	-	1	8	8	10	1	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 70a

Coronal observations at Climax, Colorado (6704A), east limb

Date GCT	Degrees north of the solar equator 90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	Degrees south of the solar equator 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Aug. 1.9	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.8	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.6	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	3	3	2	2	3	3	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	3	3	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
13.7	-	-	-	-	-	-	-	-	-	-	1	2	2	2	3	3	3	3	3	2	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.6	-	-	-	-	-	-	-	-	-	-	-	-	1	1	3	4	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-
20.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-
21.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	2	1	1	2	2	3	4	4	2	1	-	-	-	-	-	-	-	-	-	-
22.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
24.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	4	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 70b

Coronal observations at Climax, Colorado (6704A), west limb

Date	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Aug. 1.9	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-
5.6	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
6.8	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	2	2	3	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-
29.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

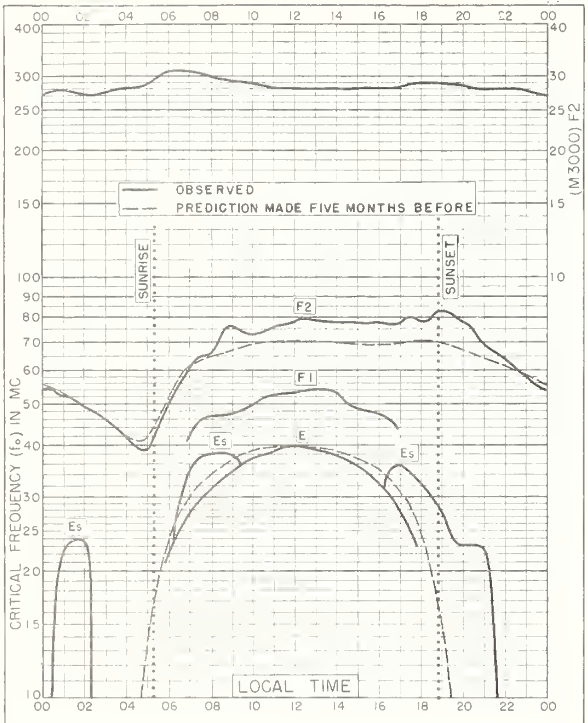


Fig 1. WASHINGTON, D.C.
39.0°N, 77.5°W AUGUST 1949

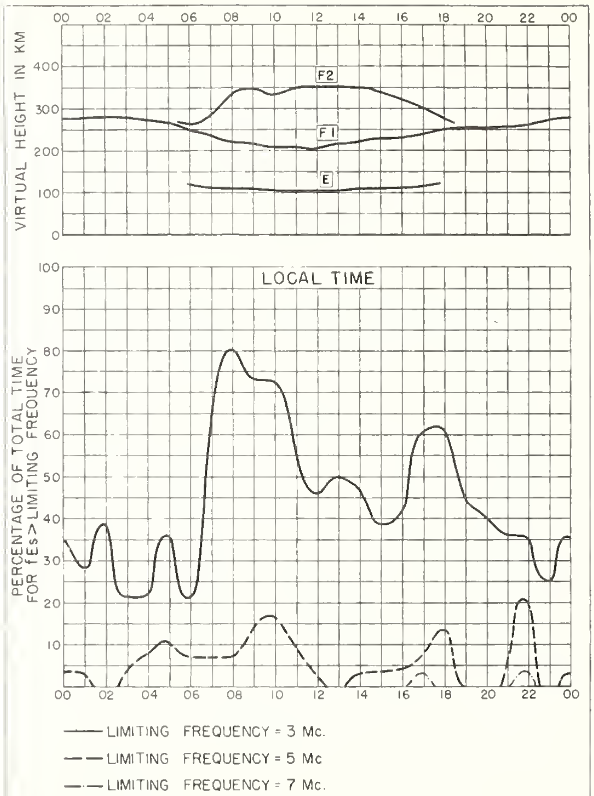


Fig. 2. WASHINGTON, D.C. AUGUST 1949

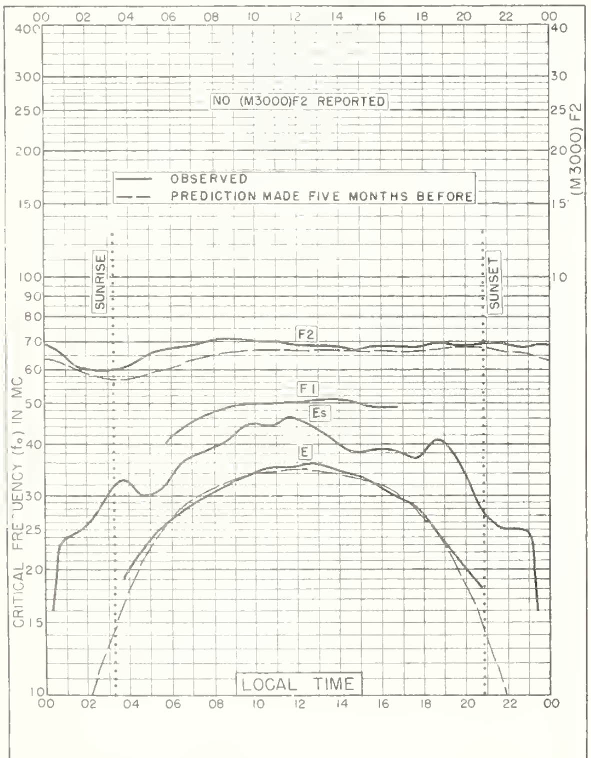


Fig 3. OSLO, NORWAY
60.0°N, 11.0°E JULY 1949

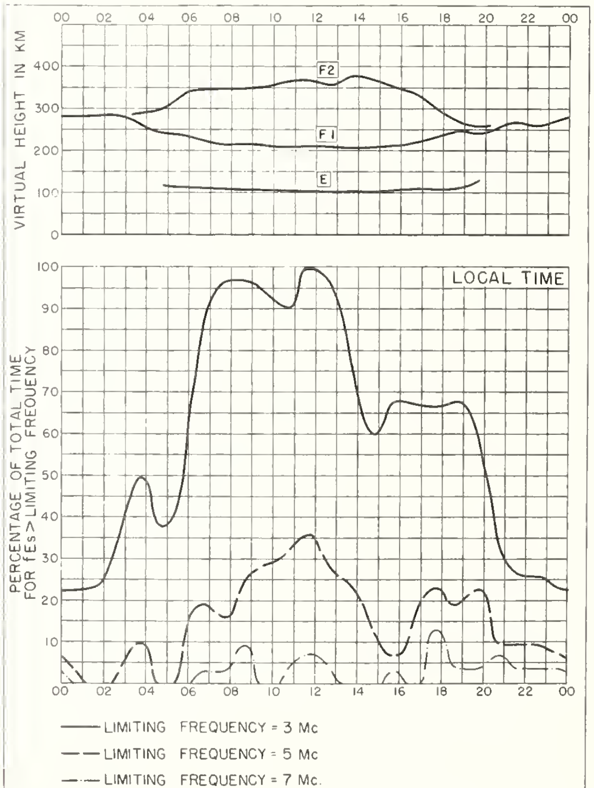


Fig. 4. OSLO, NORWAY JULY 1949

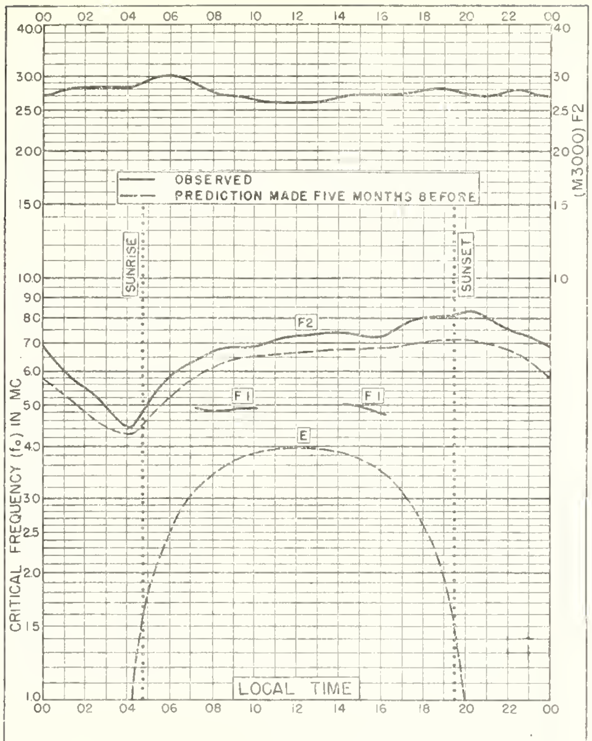


Fig. 5. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W JULY 1949

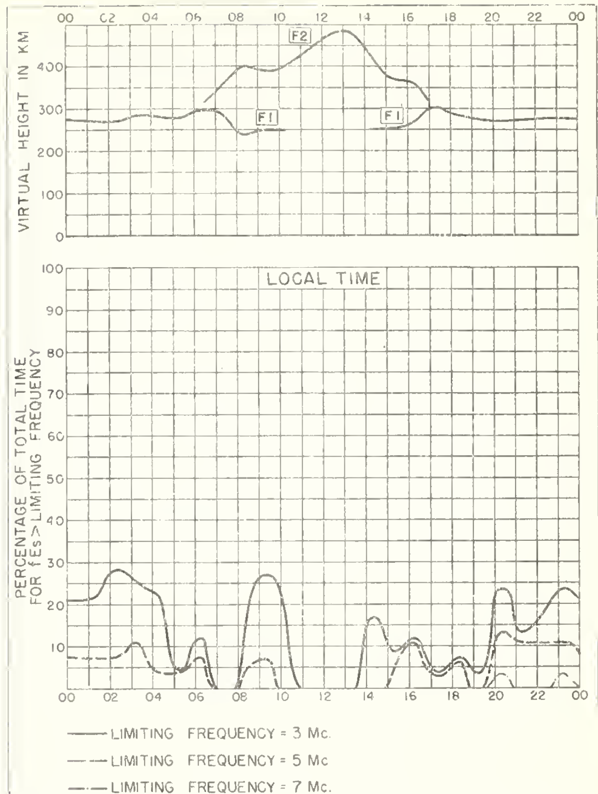


Fig. 6. BOSTON, MASSACHUSETTS JULY 1949

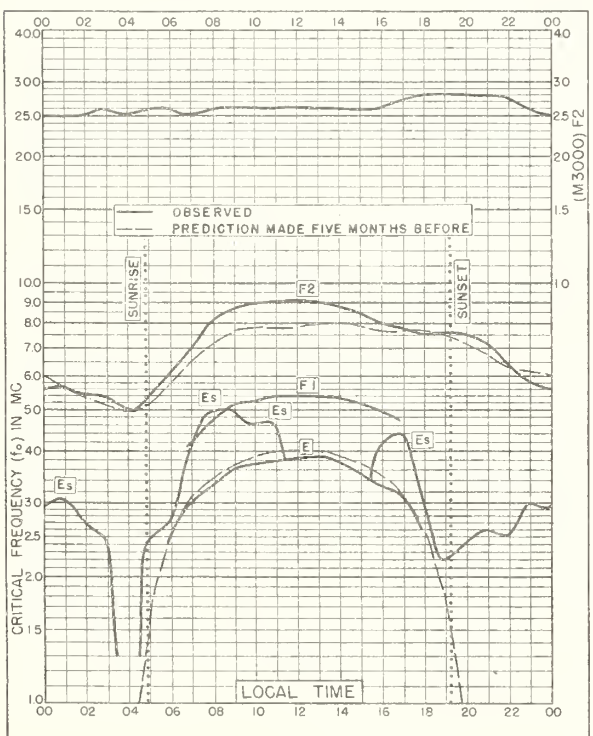


Fig. 7. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W JULY 1949

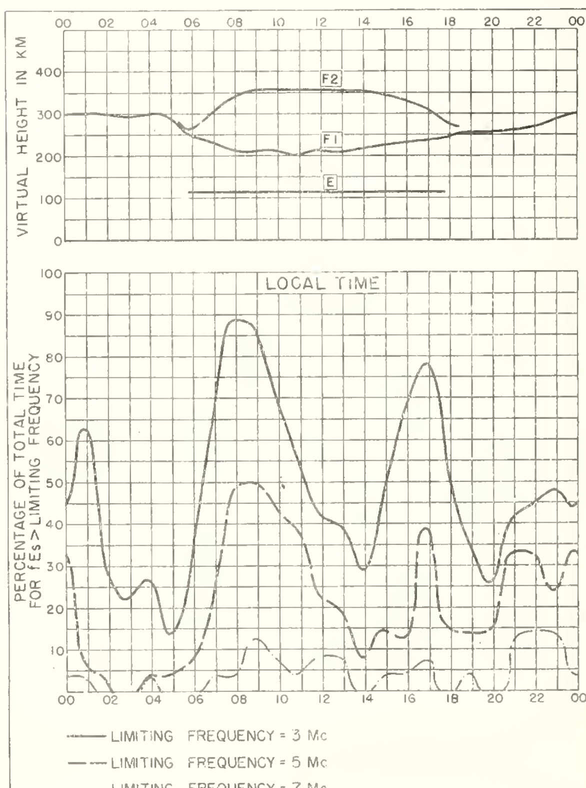


Fig. 8. SAN FRANCISCO, CALIFORNIA JULY 1949

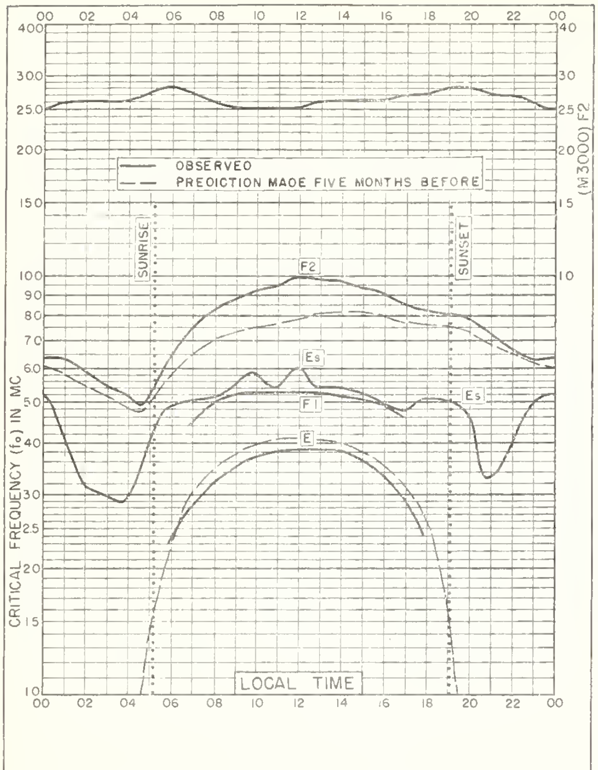


Fig. 9. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W JULY 1949

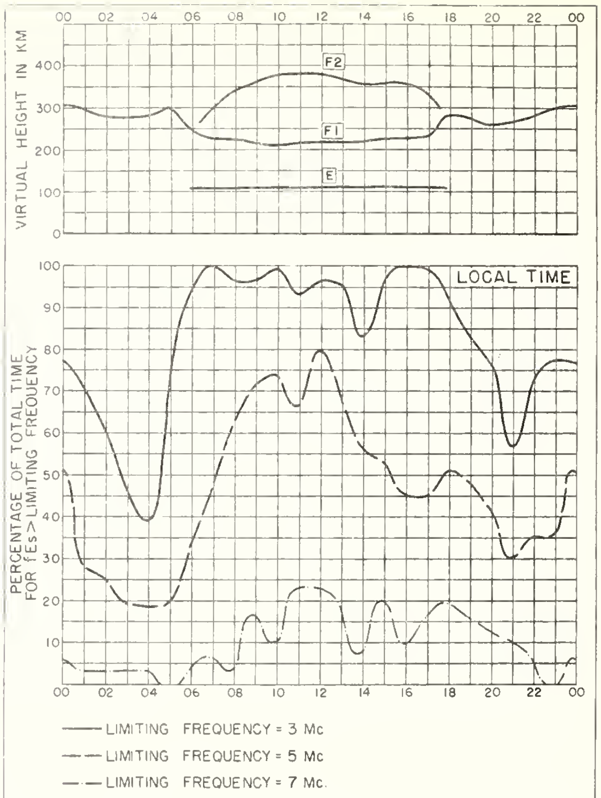


Fig. 10. WHITE SANDS, NEW MEXICO JULY 1949

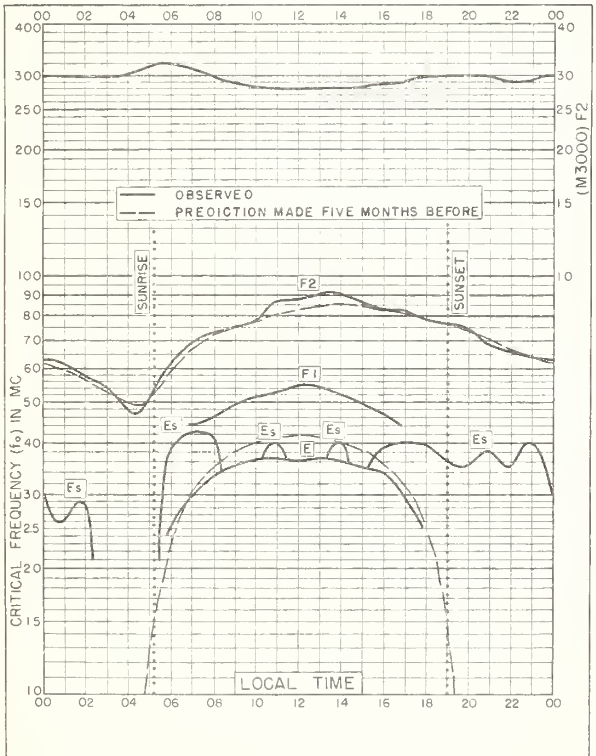


Fig. 11. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W JULY 1949

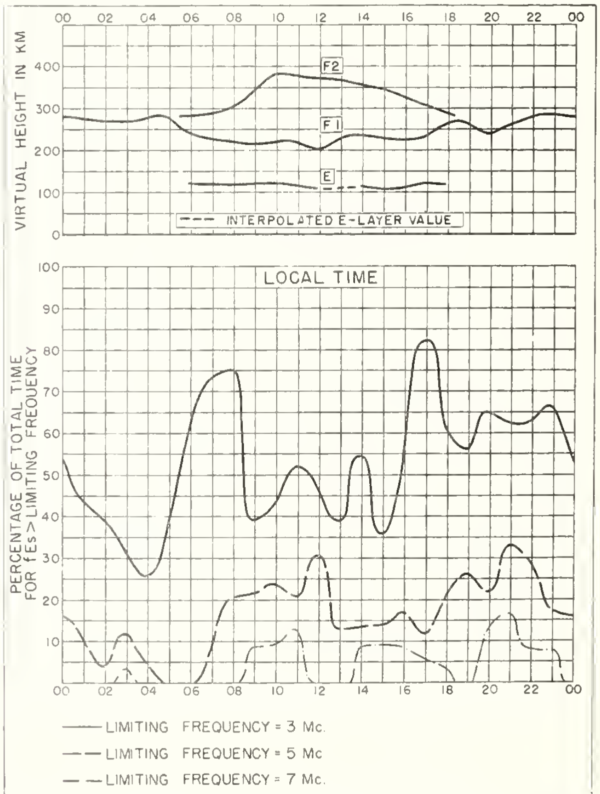


Fig. 12. BATON ROUGE, LOUISIANA JULY 1949

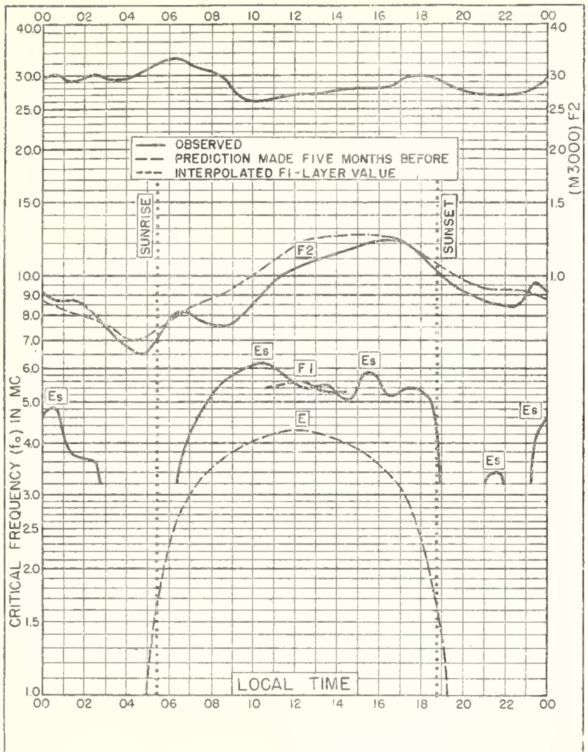


Fig. 13. OKINAWA I.
26.3°N, 127.7°E JULY 1949

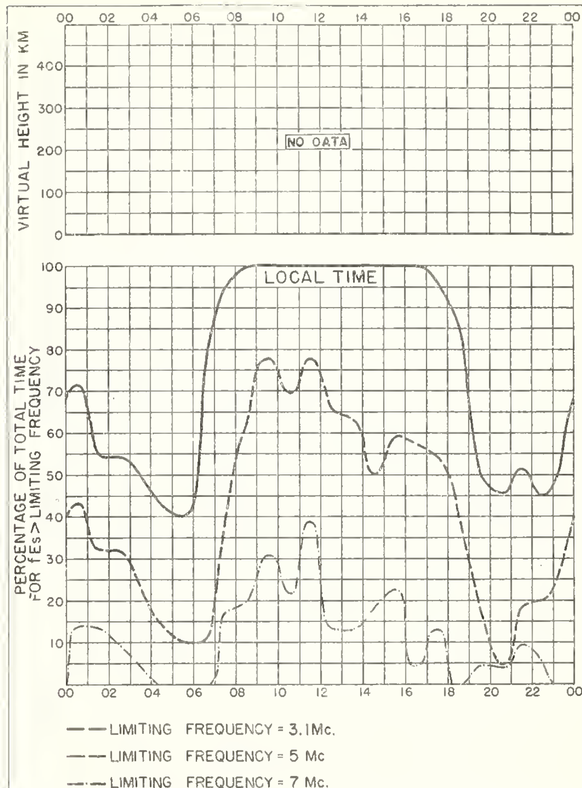


Fig. 14. OKINAWA I. JULY 1949

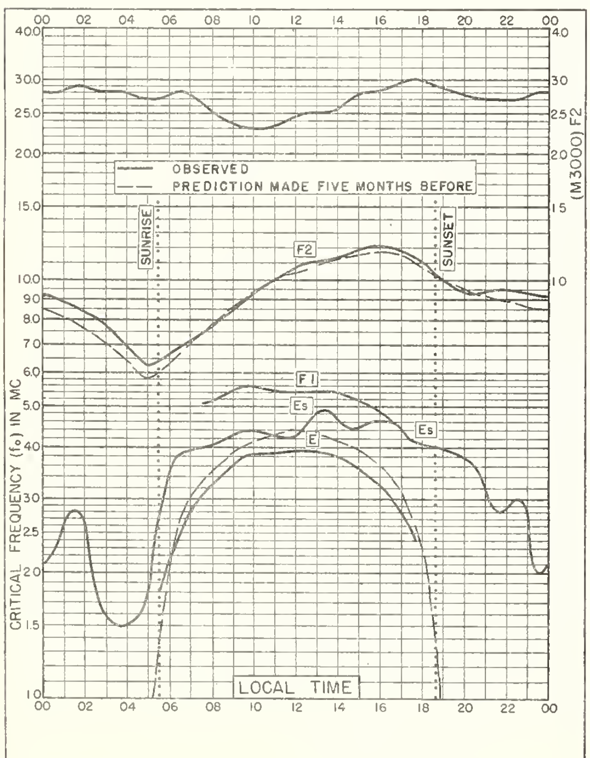


Fig. 15. MAUI, HAWAII
20.8°N, 156.5°W JULY 1949

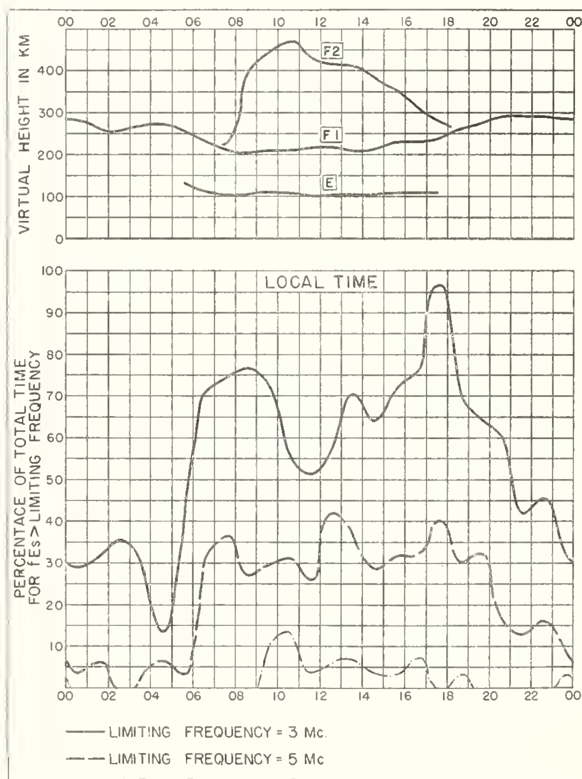


Fig. 16. MAUI, HAWAII JULY 1949

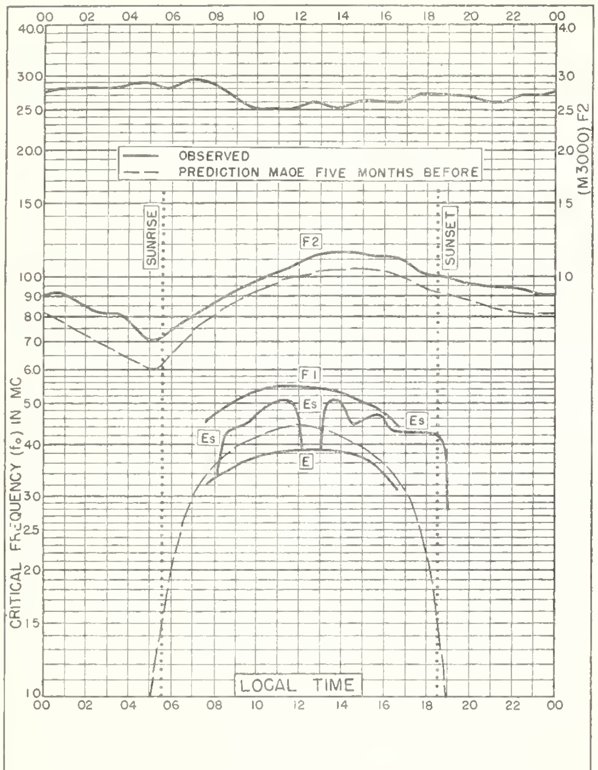


Fig. 17. SAN JUAN, PUERTO RICO
18.4°N, 66.1°W JULY 1949

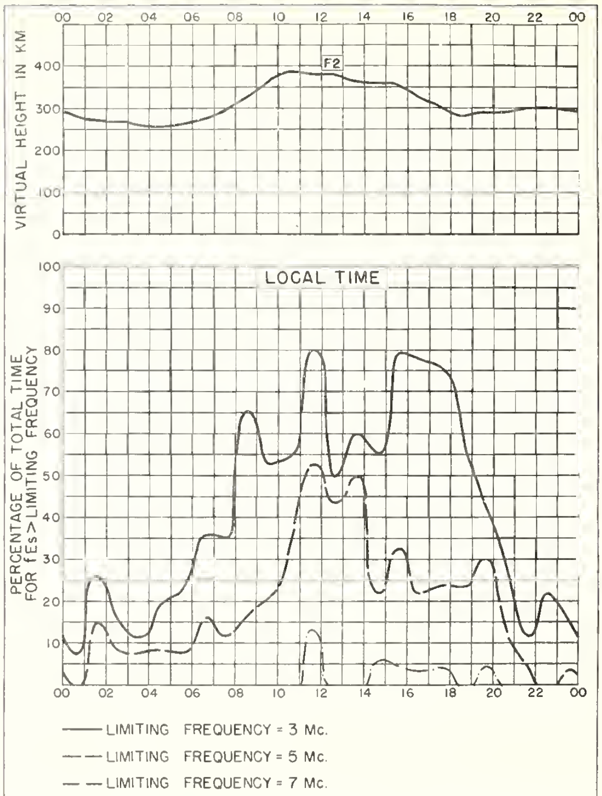


Fig. 18. SAN JUAN, PUERTO RICO JULY 1949

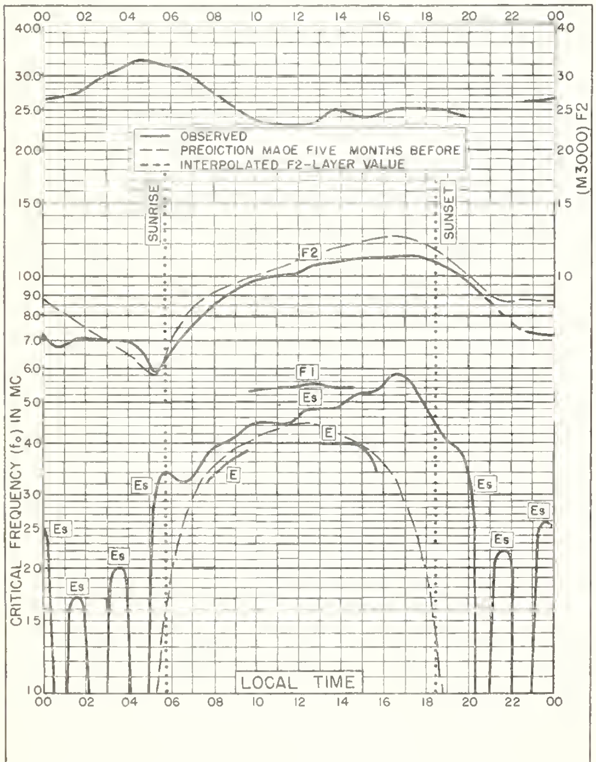


Fig. 19. GUAM I.
13.6°N, 144.9°E JULY 1949

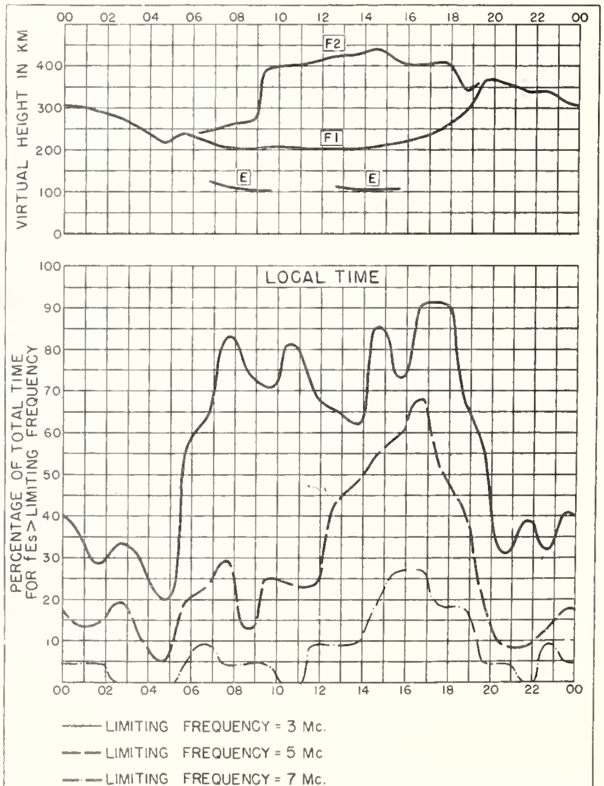


Fig. 20. GUAM I. JULY 1949

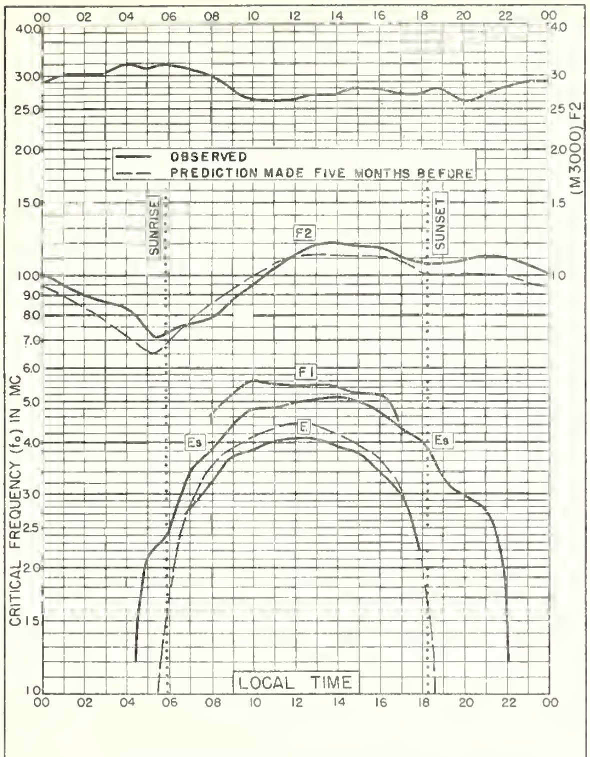


Fig. 21. TRINIDAD, BRIT. WEST INDIES
10. 6°N, 61. 2°W JULY 1949

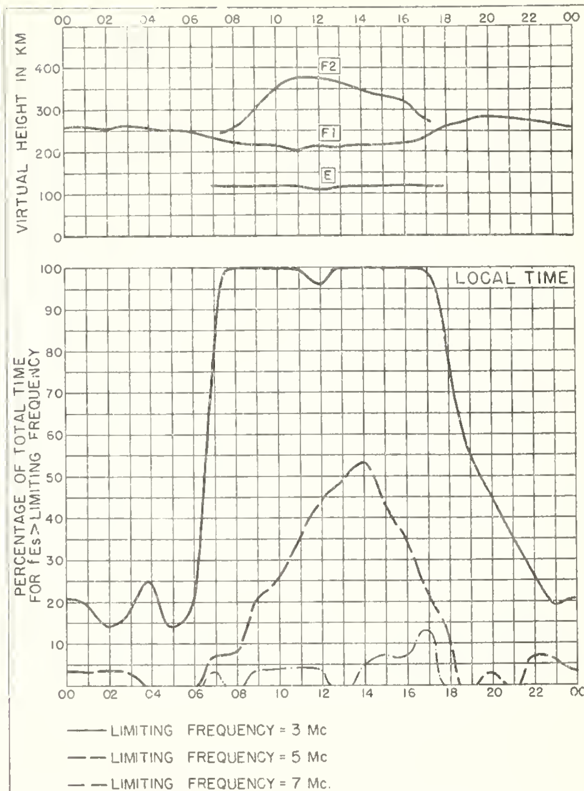


Fig. 22. TRINIDAD, BRIT. WEST INDIES JULY 1949

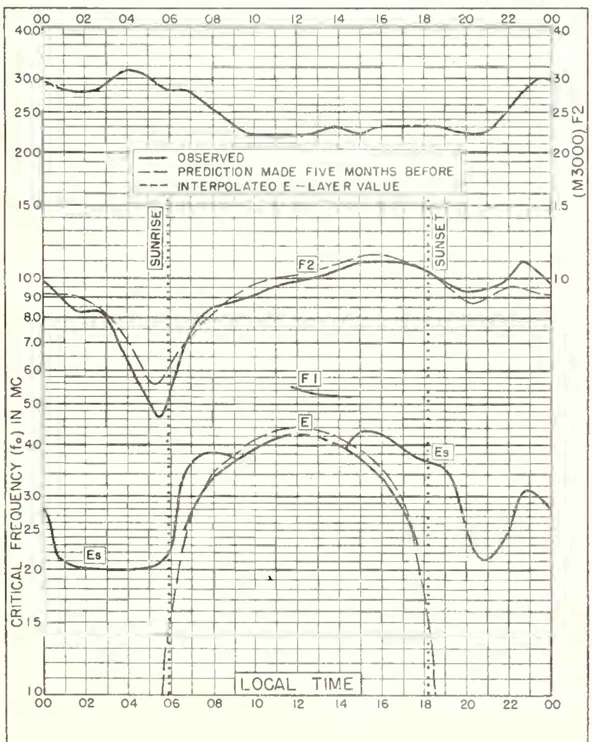


Fig. 23. PALMYRA I.
5.9°N, 162.1°W JULY 1949

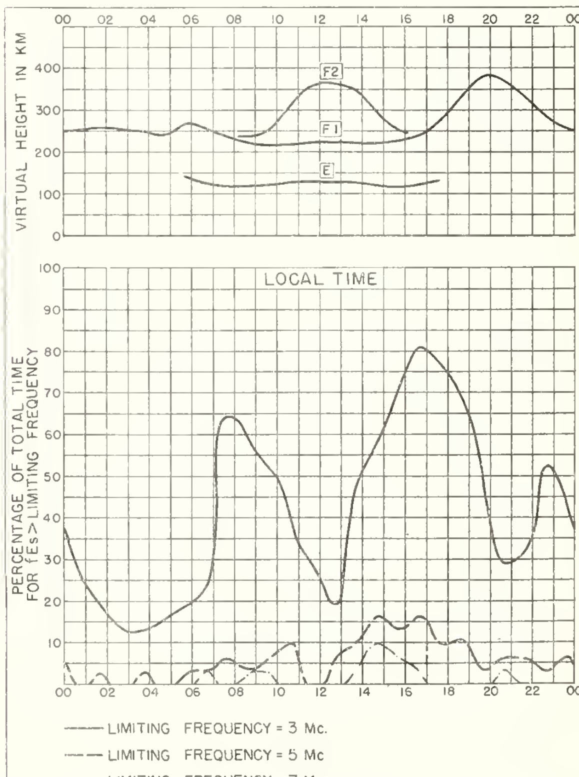


Fig. 24. PALMYRA I. JULY 1949

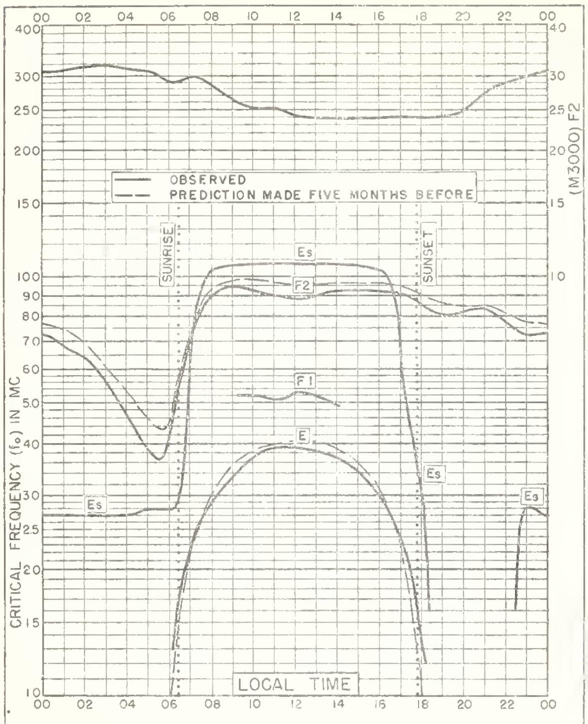


Fig. 25. HUANCAYO, PERU
12.0°S, 75.3°W JULY 1949

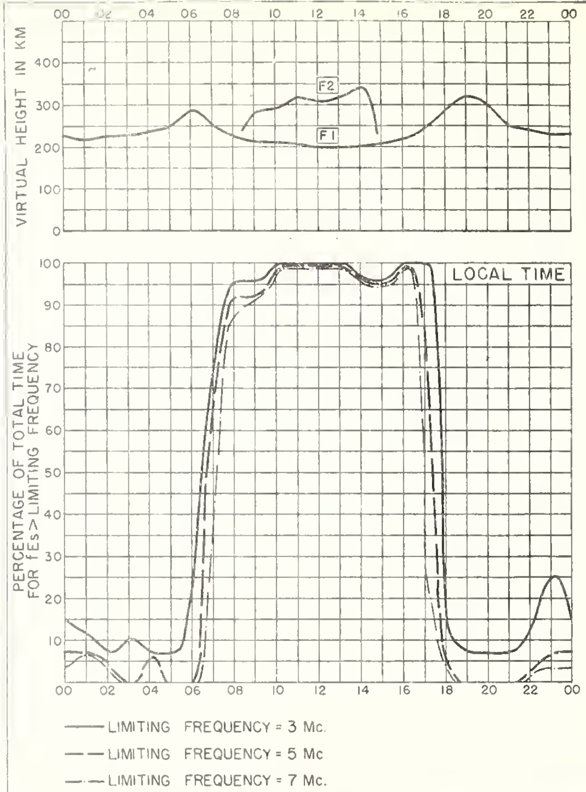


Fig. 26. HUANCAYO, PERU . JULY 1949

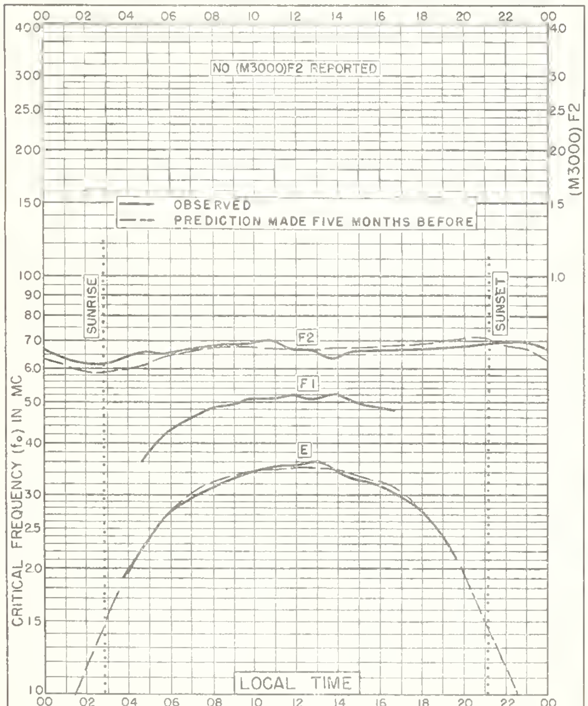


Fig. 27. OSLO, NORWAY
60.0°N, 11.0°E JUNE 1949

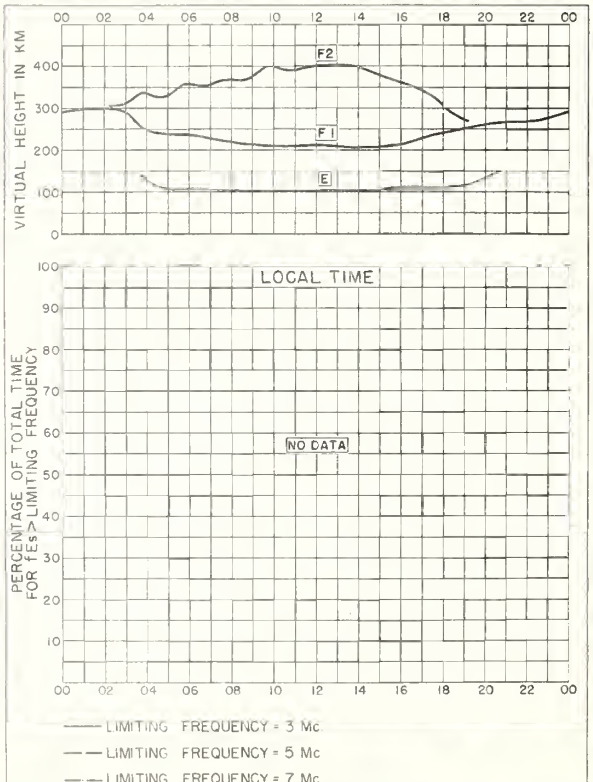


Fig. 28. OSLO, NORWAY JUNE 1949

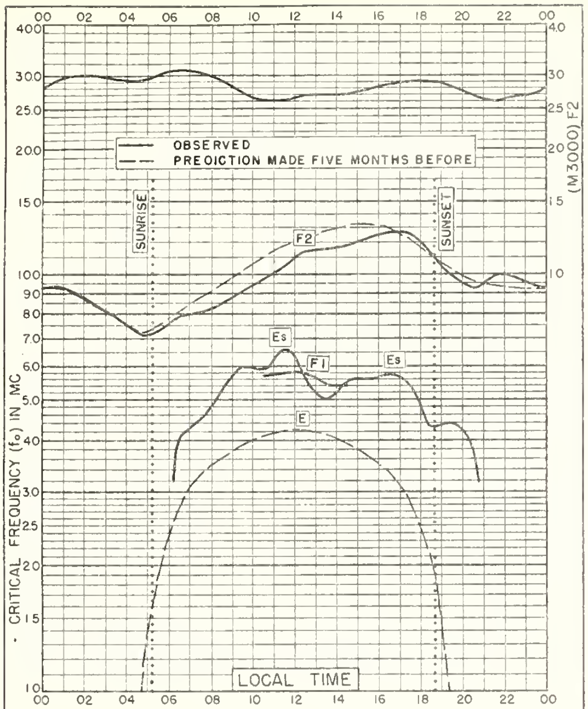


Fig. 29. OKINAWA I.
26.3°N, 127.7°E JUNE 1949

Fig. 30. OKINAWA I. JUNE 1949

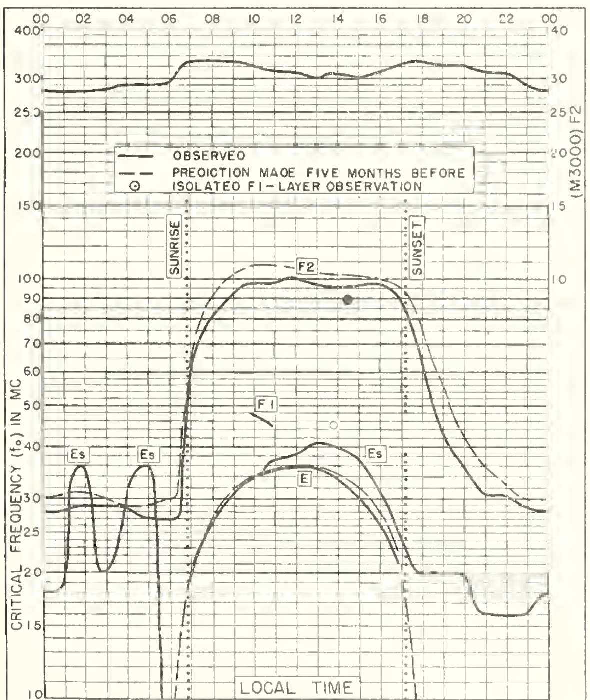


Fig. 31. JOHANNESBURG, U. OF S. AFRICA
26.2°S, 28.0°E JUNE 1949

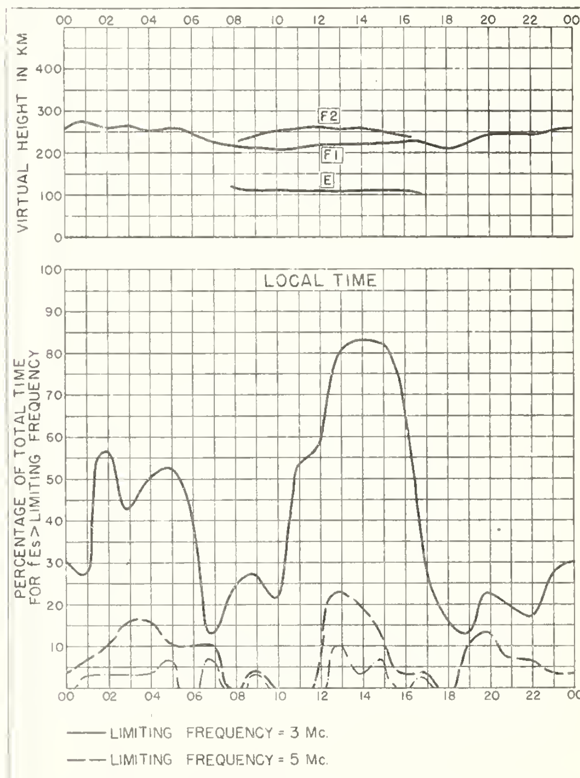


Fig. 32. JOHANNESBURG, U. OF S. AFRICA JUNE 1949

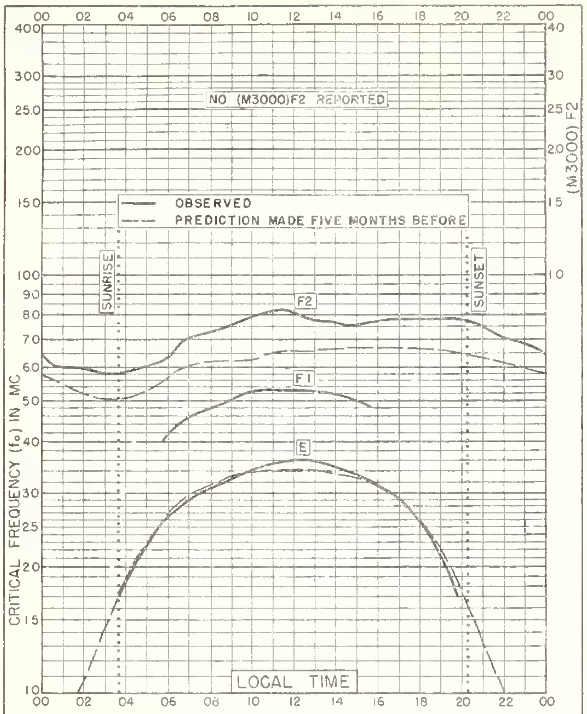
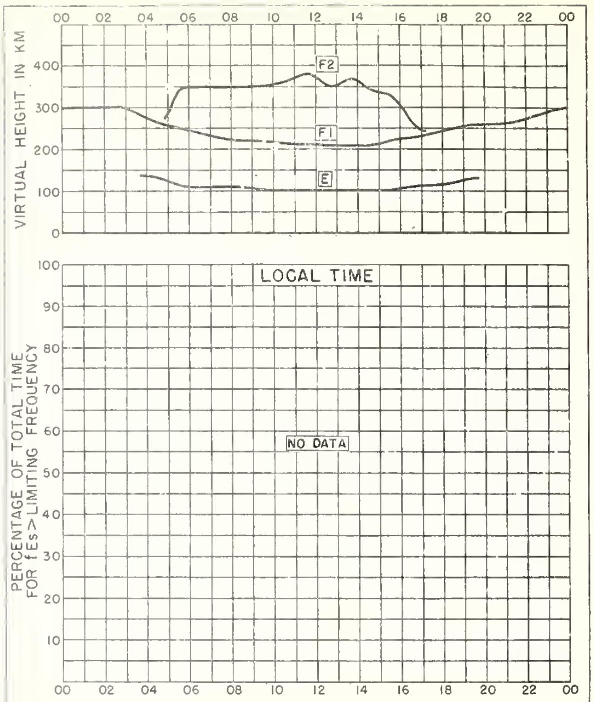


Fig. 33. OSLO, NORWAY
60.0°N, 11.0°E MAY 1949



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LIMITING FREQUENCY = 5 Mc.
LIMITING FREQUENCY = 7 Mc.

Fig. 34. OSLO, NORWAY MAY 1949

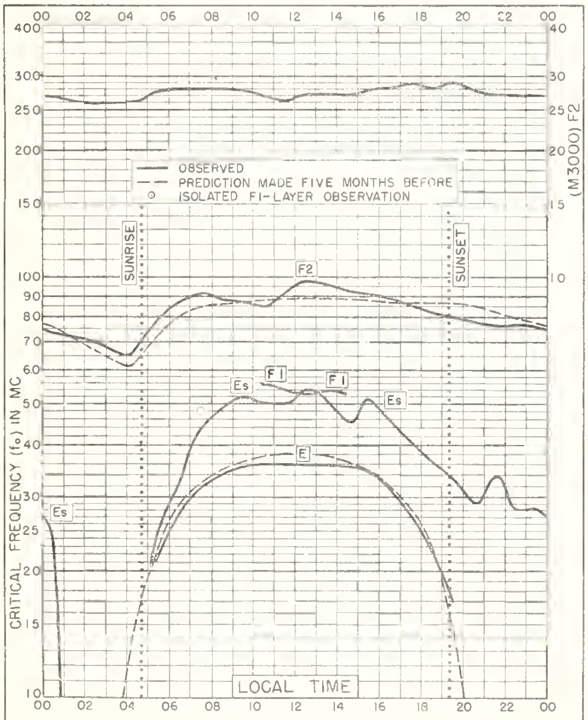
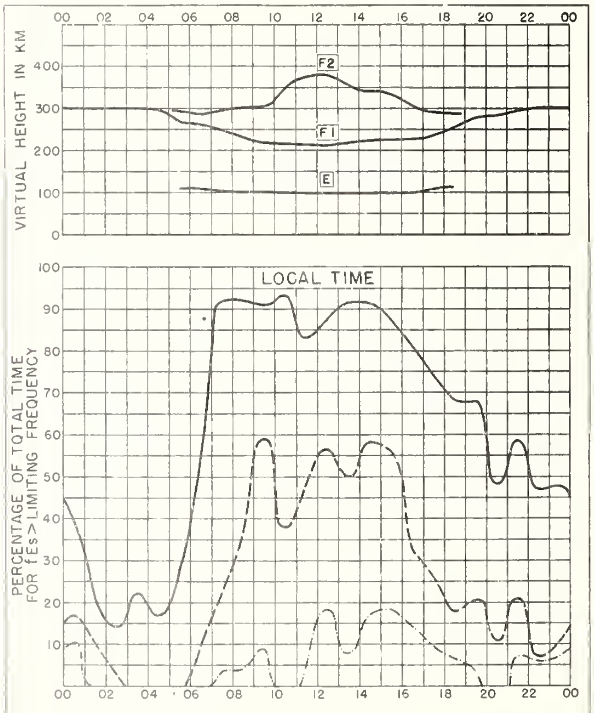


Fig. 35. WAKKANAI, JAPAN
45.4°N, 141.7°E MAY 1949



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LIMITING FREQUENCY = 5 Mc
LIMITING FREQUENCY = 7 Mc.

Fig. 36. WAKKANAI, JAPAN MAY 1949

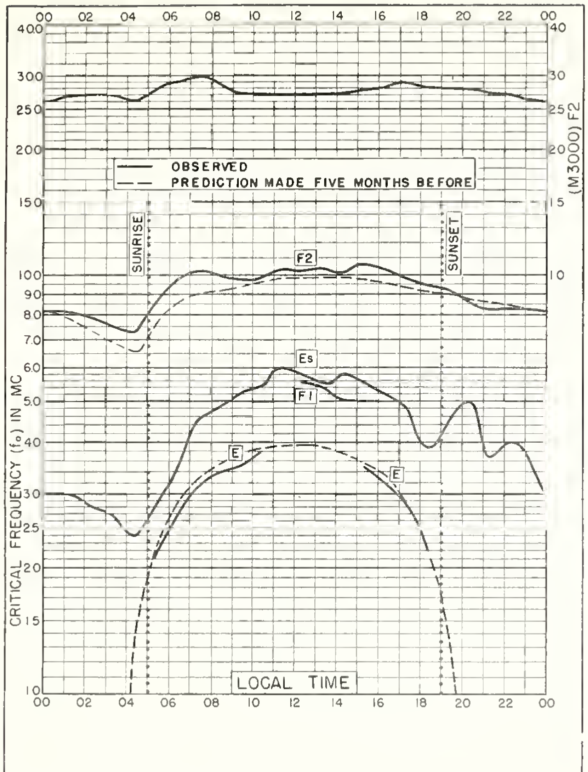

Fig. 37. FUKAURA, JAPAN
40.6°N, 139.9°E MAY 1949

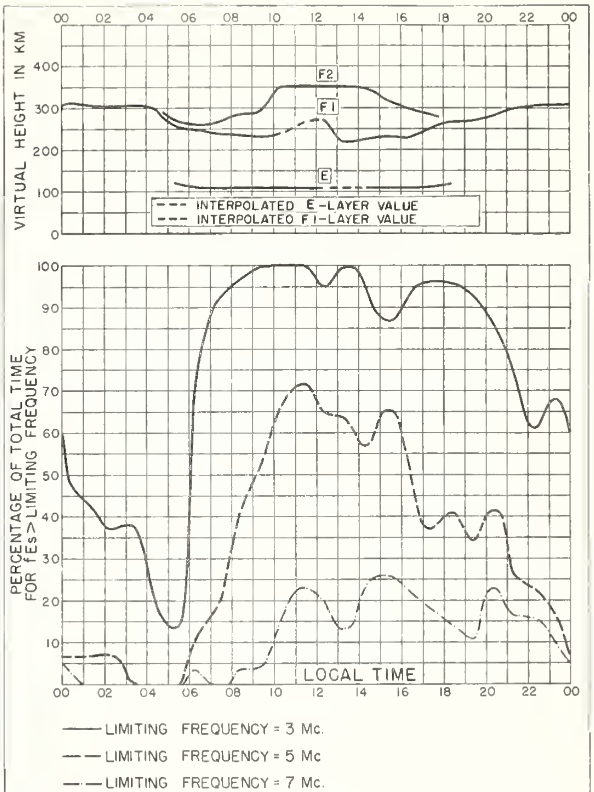

Fig. 38. FUKAURA, JAPAN MAY 1949

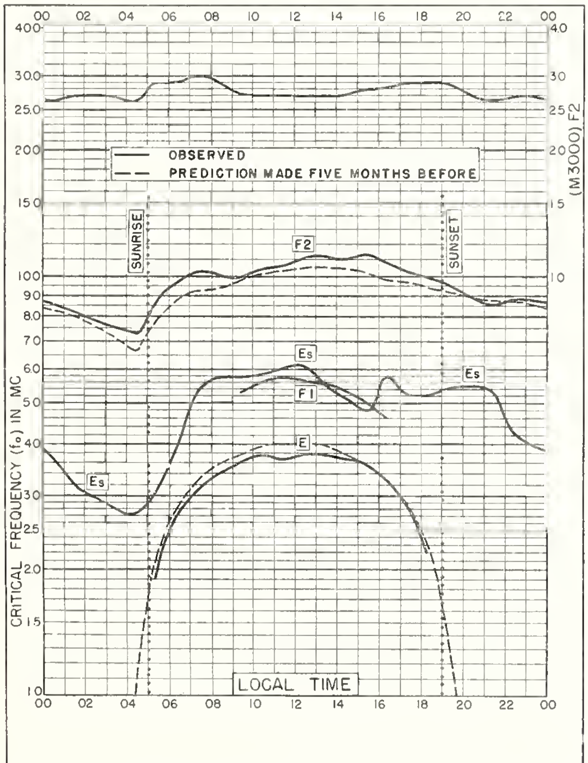

Fig. 39. SHIBATA, JAPAN
37.9°N, 139.3°E MAY 1949

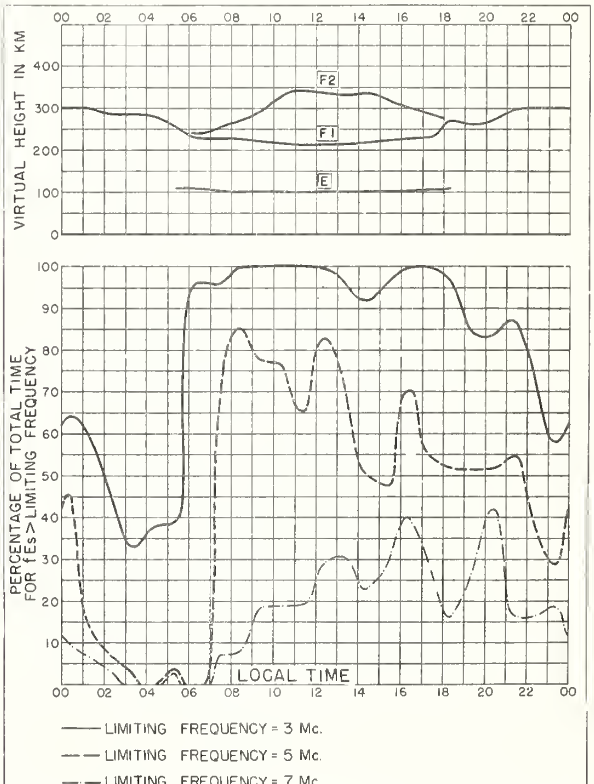

Fig. 40. SHIBATA, JAPAN MAY 1949

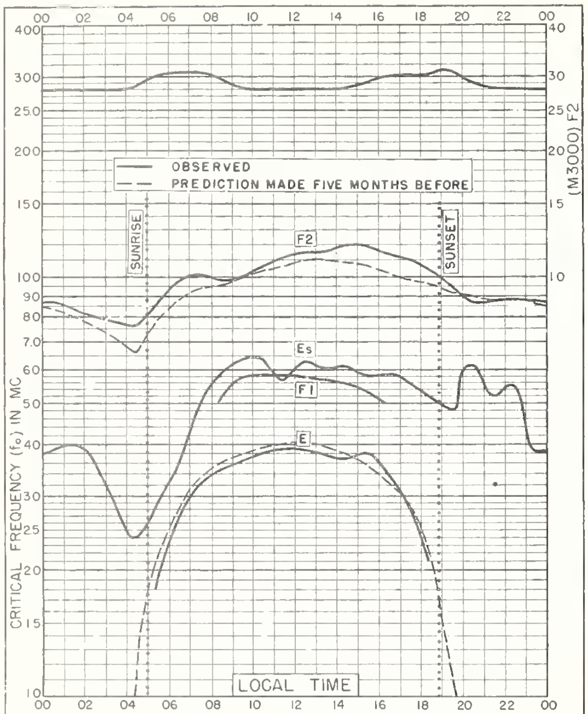

Fig. 41. TOKYO, JAPAN
35.7°N, 139.5°E MAY 1949

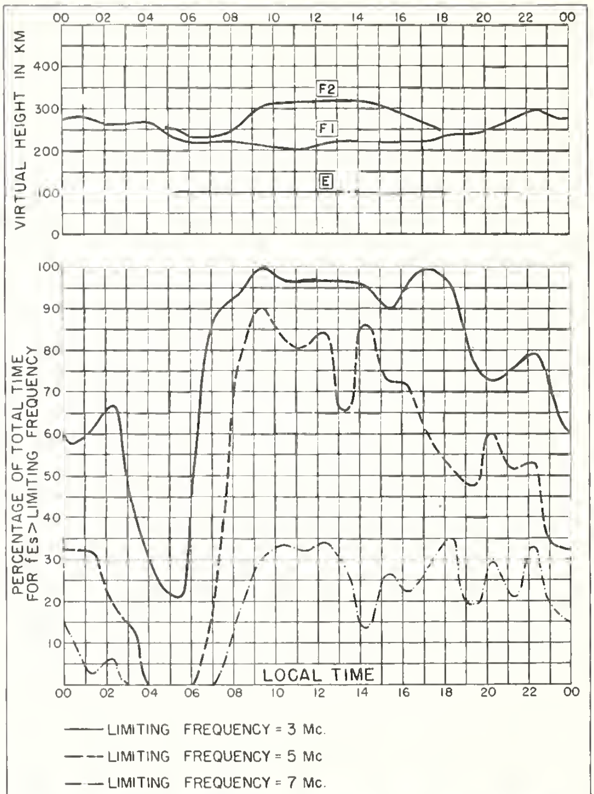

Fig. 42. TOKYO, JAPAN MAY 1949

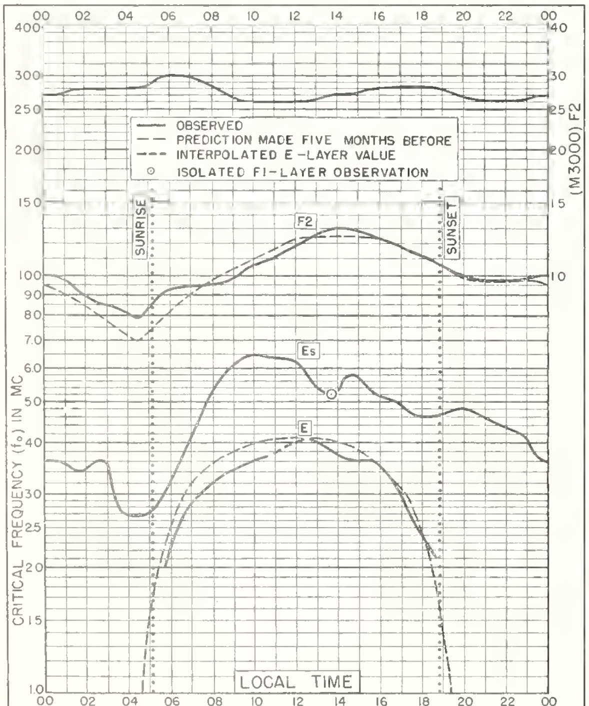

Fig. 43. YAMAKAWA, JAPAN
31.2°N, 130.6°E MAY 1949

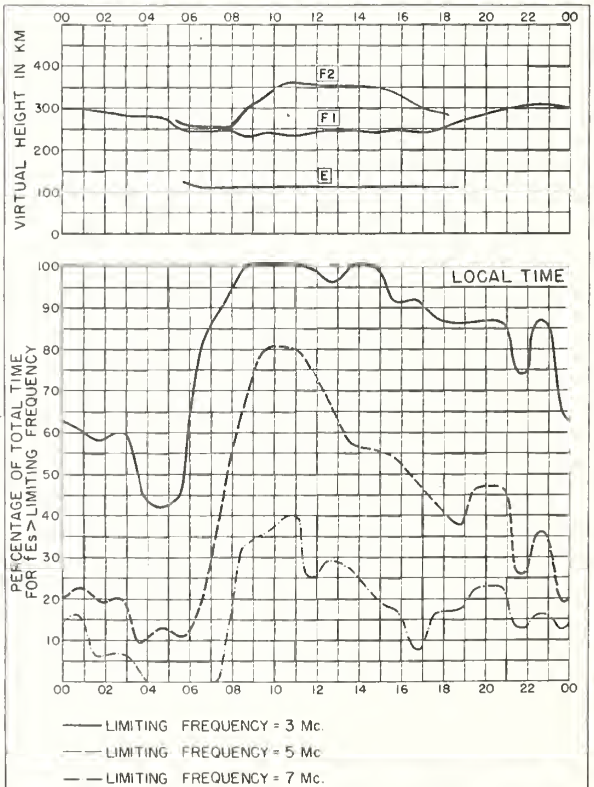

Fig. 44. YAMAKAWA, JAPAN MAY 1949

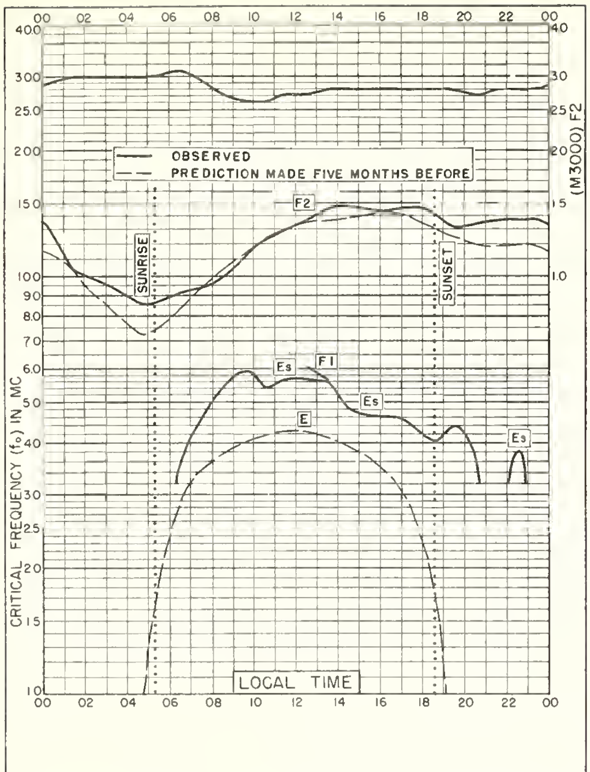

Fig. 45. OKINAWA I.
26. 3°N, 127. 7°E MAY 1949

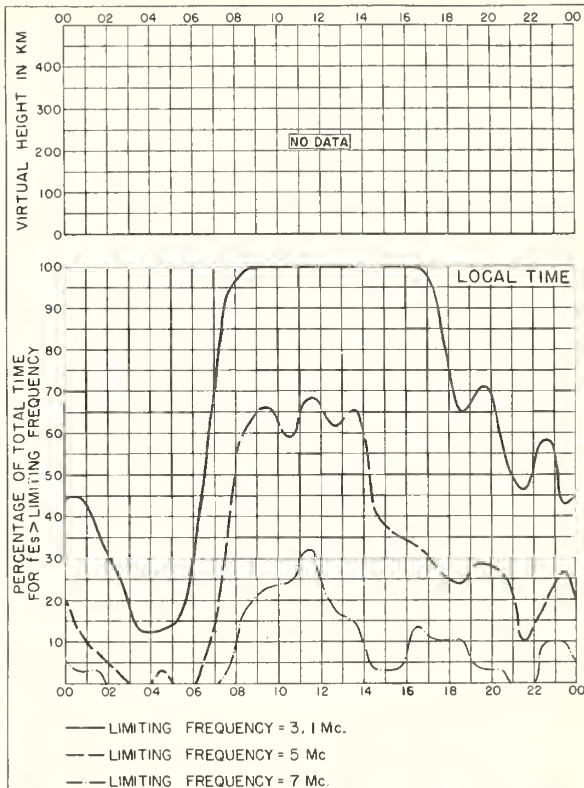

Fig. 46. OKINAWA I. MAY 1949

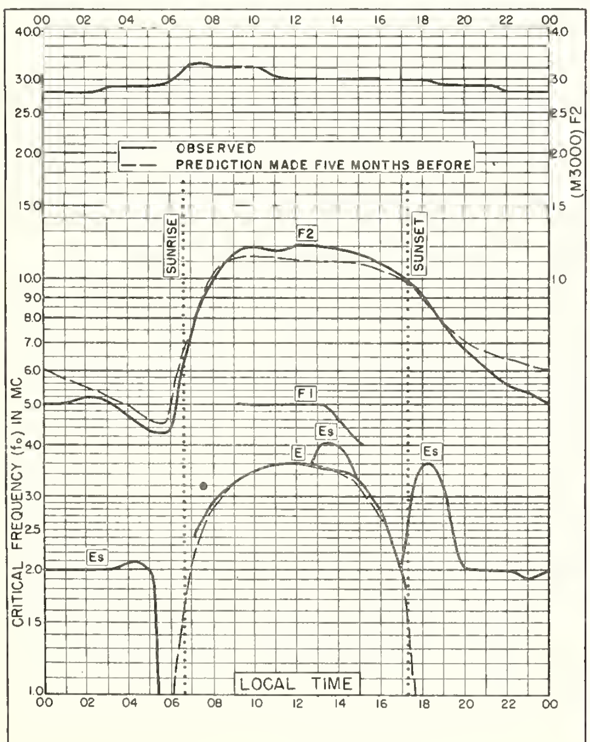

Fig. 47. BRISBANE, AUSTRALIA
27.5°S, 153. 0°E MAY 1949

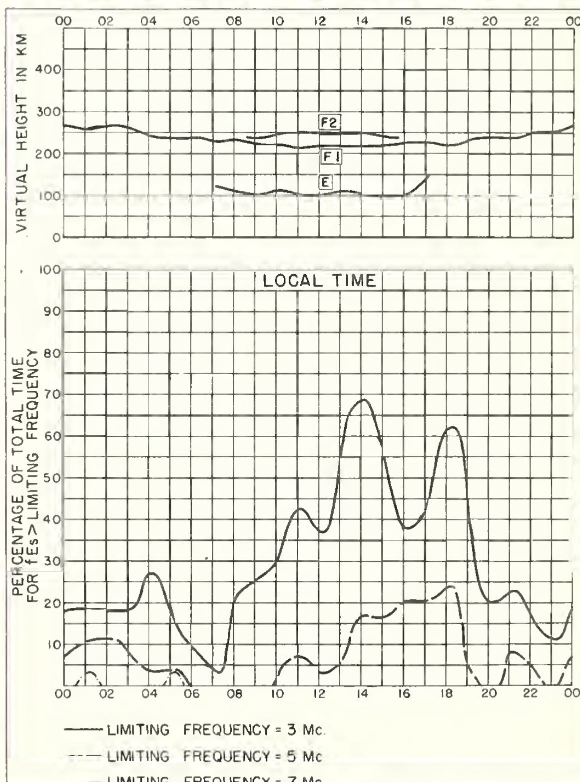

Fig. 48. BRISBANE, AUSTRALIA MAY 1949

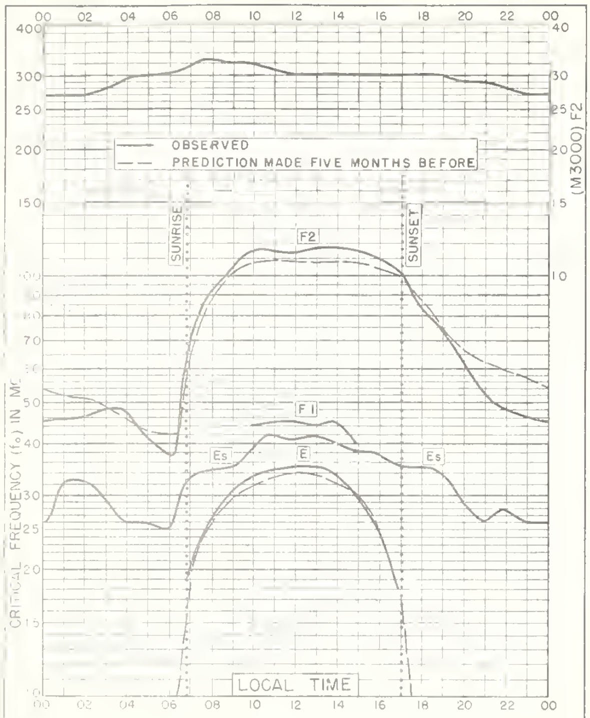

Fig. 49 CANBERRA, AUSTRALIA
35.3°S, 149.0°E MAY 1949

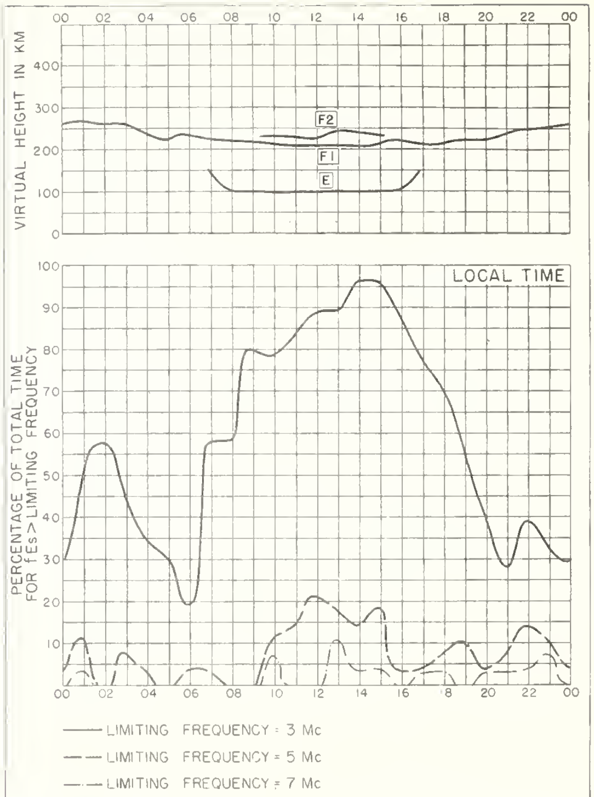

Fig. 50. CANBERRA, AUSTRALIA MAY 1949

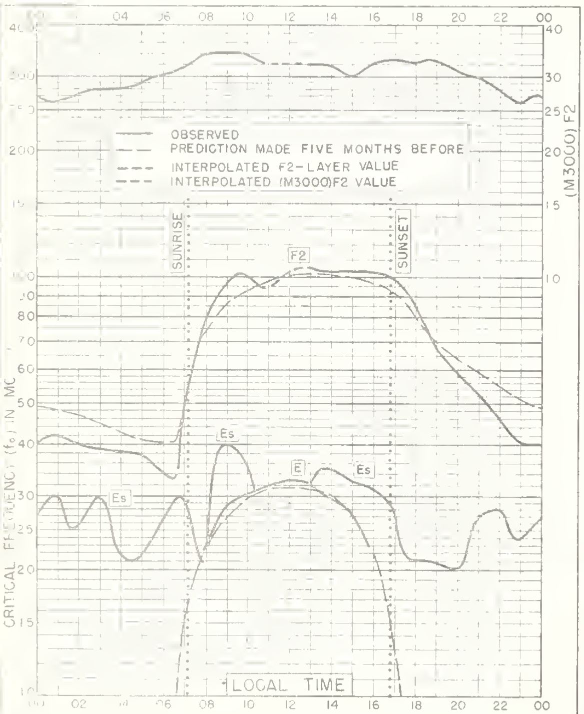

Fig. 51 HOBART, TASMANIA
42.8°S, 147.4°E MAY 1949

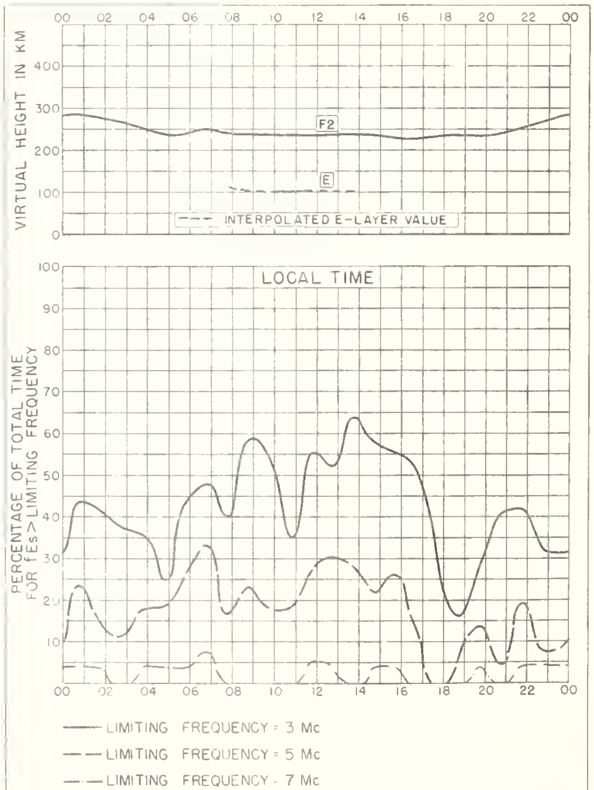

Fig 52. HOBART, TASMANIA MAY 1949

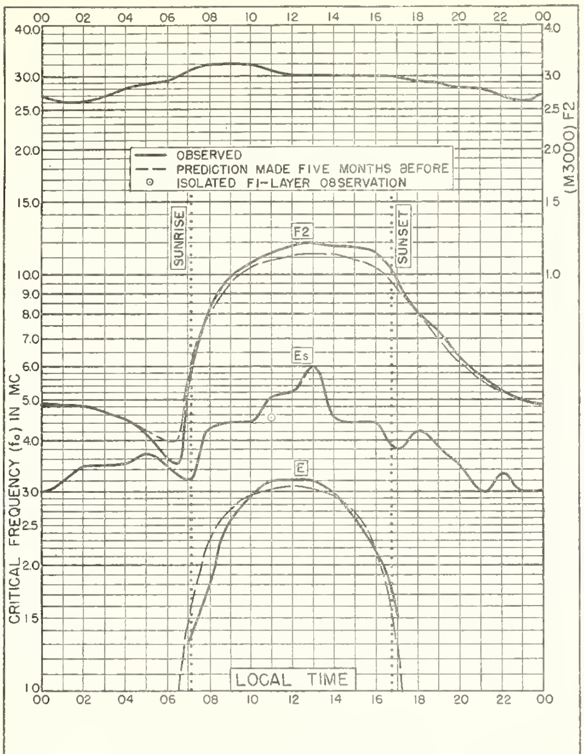

Fig. 53. CHRISTCHURCH, N. Z.
43.5°S, 172.7°E MAY 1949

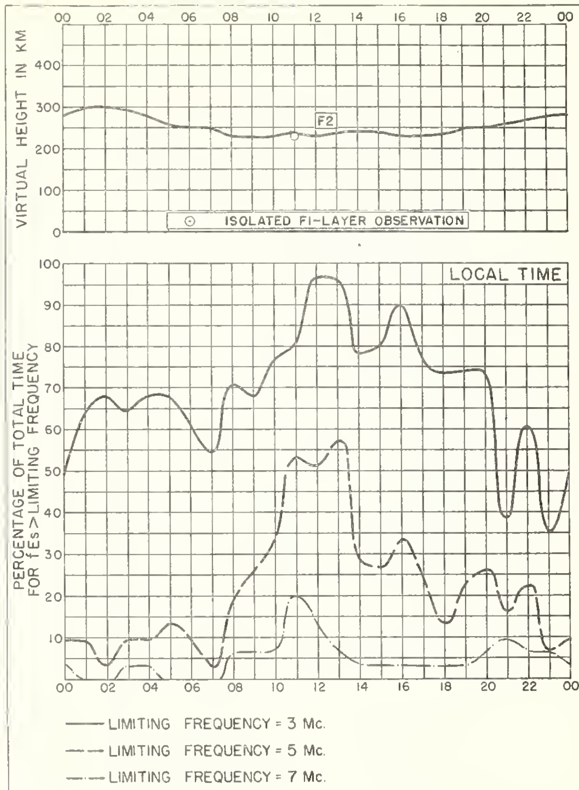

Fig. 54. CHRISTCHURCH, N. Z. MAY 1949

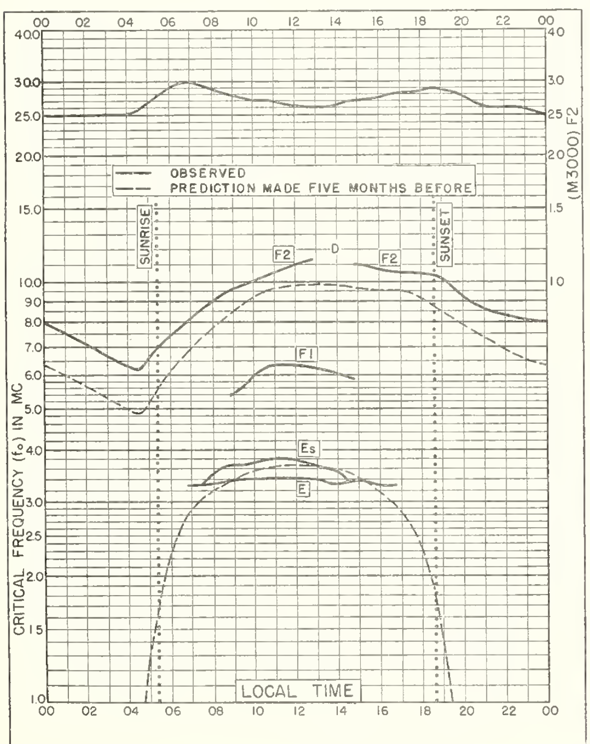

Fig. 55. POITIERS, FRANCE
46.6°N, 2.0°W APRIL 1949

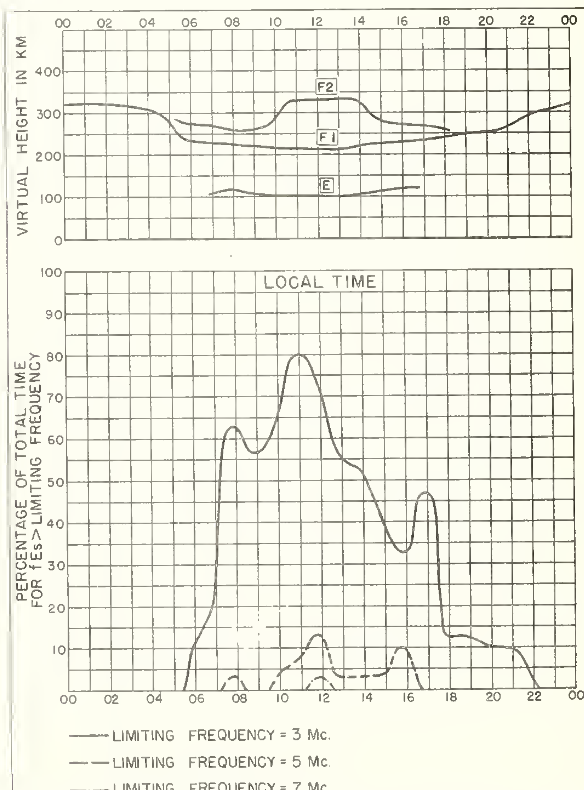

Fig. 56. POITIERS, FRANCE APRIL 1949

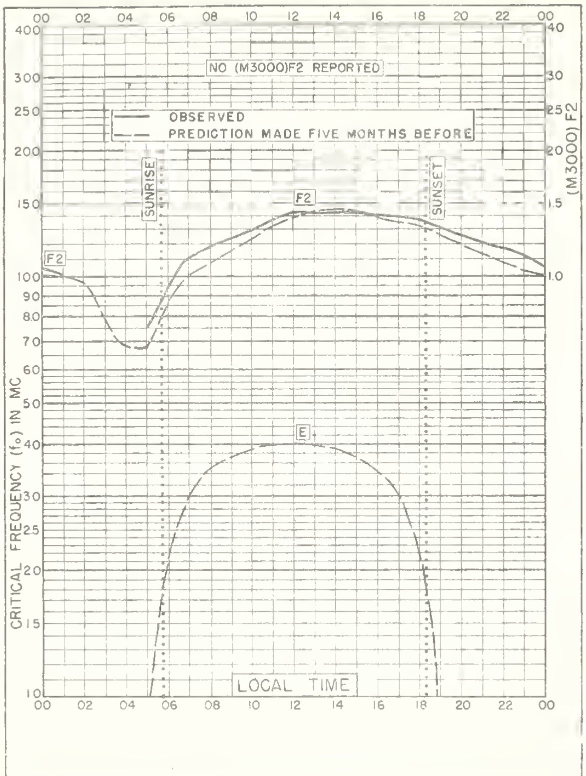

Fig. 57. DELHI, INDIA
28.6°N, 77.1°E APRIL 1949

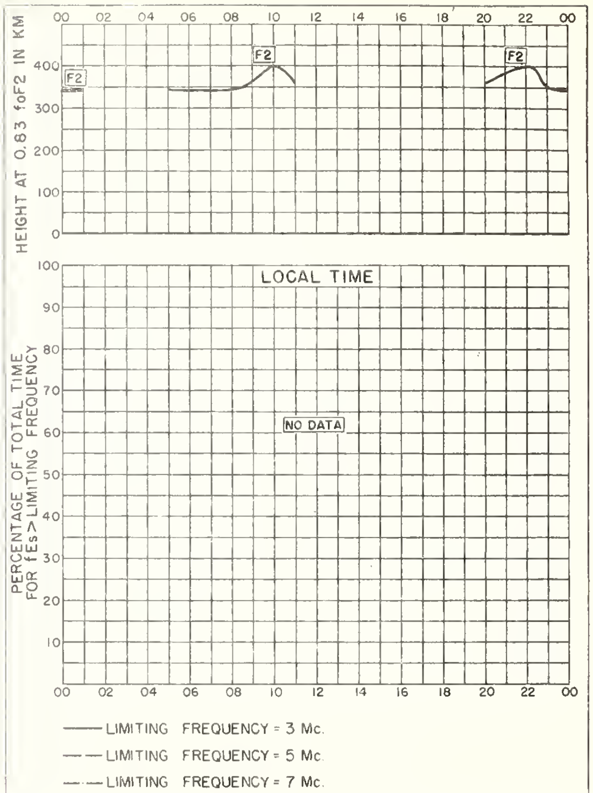

Fig. 58. DELHI, INDIA APRIL 1949

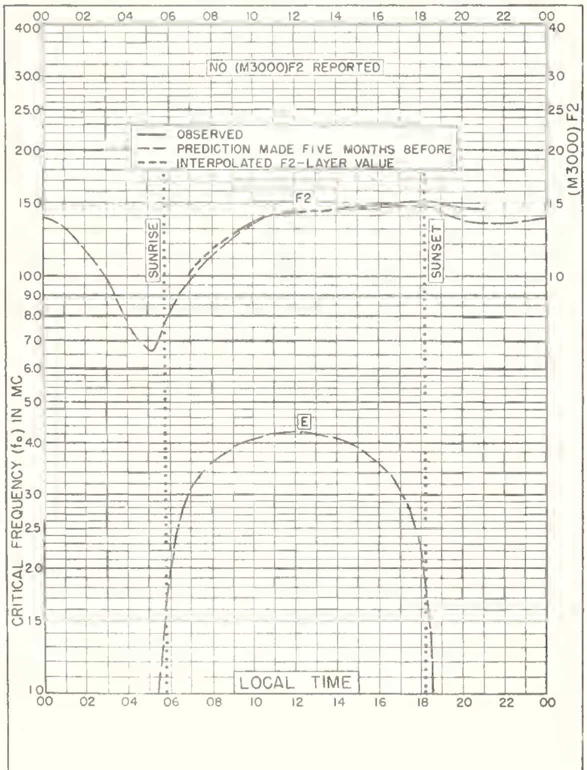

Fig. 59. BOMBAY, INDIA
19.0°N, 73.0°E APRIL 1949

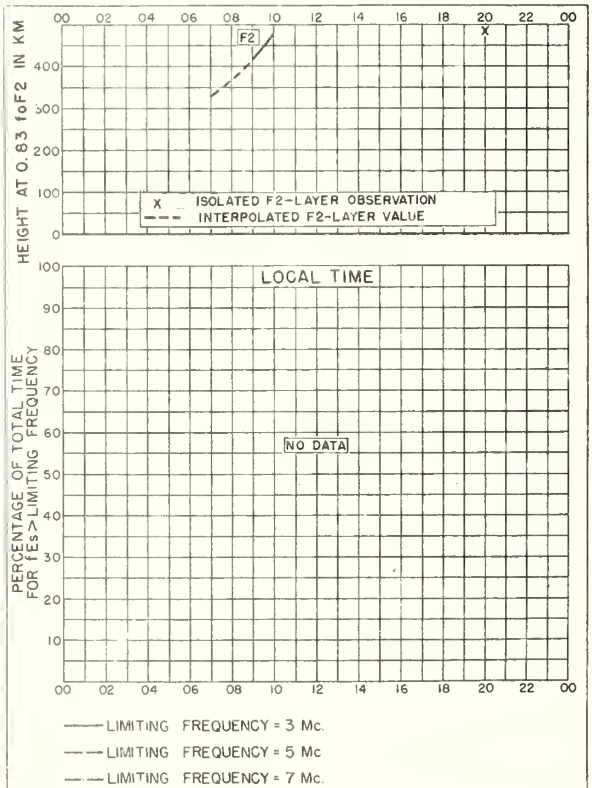

Fig. 60. BOMBAY, INDIA APRIL 1949

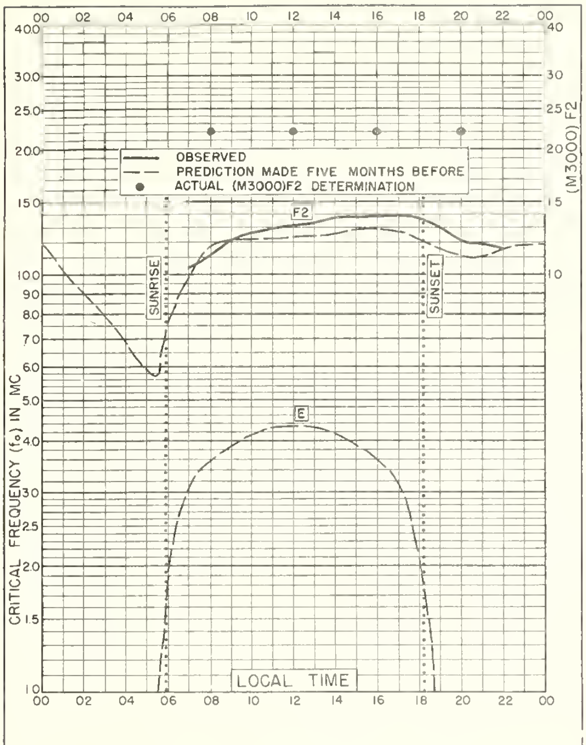

Fig. 61. MADRAS, INDIA
13.0°N, 80.2°E APRIL 1949

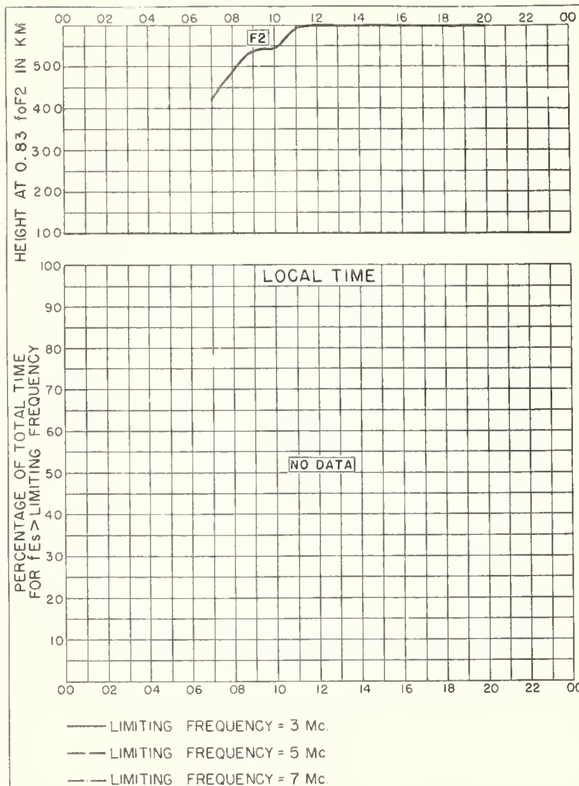

Fig. 62. MADRAS, INDIA APRIL 1949

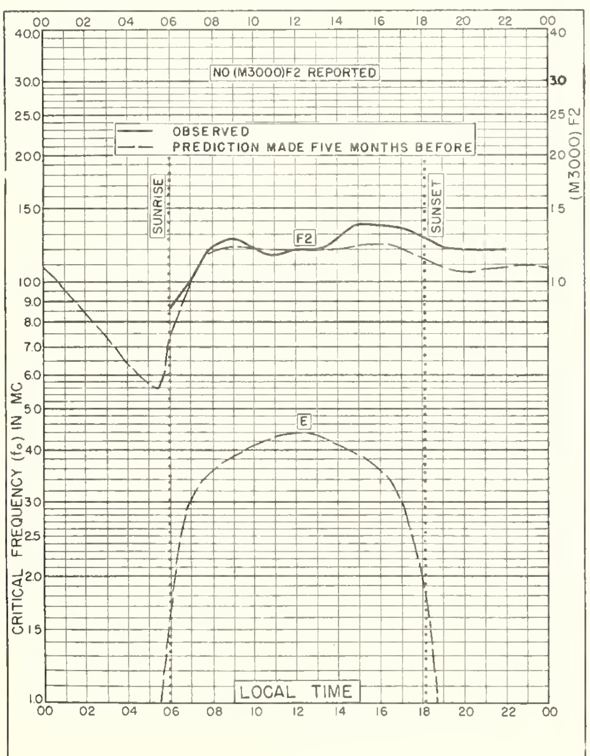

Fig. 63. TIRUCHIRAPALLI, INDIA
10.8°N, 78.8°E APRIL 1949

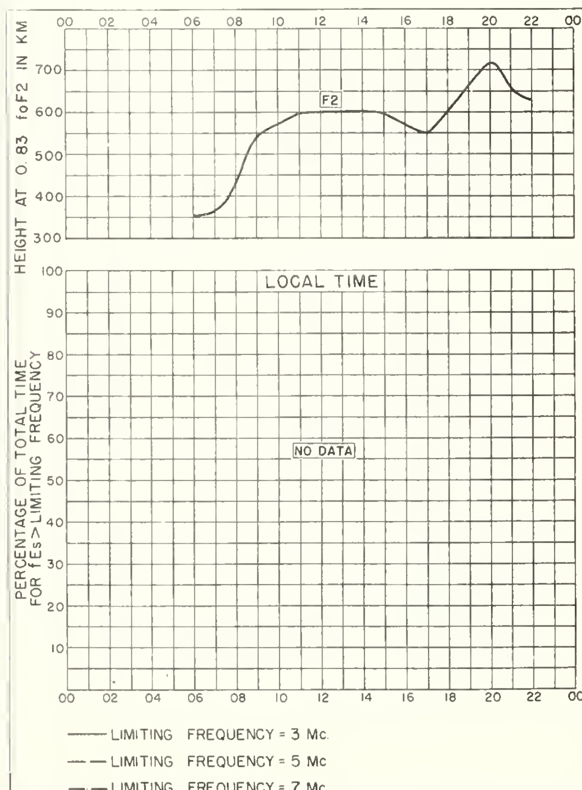

Fig. 64. TIRUCHIRAPALLI, INDIA APRIL 1949

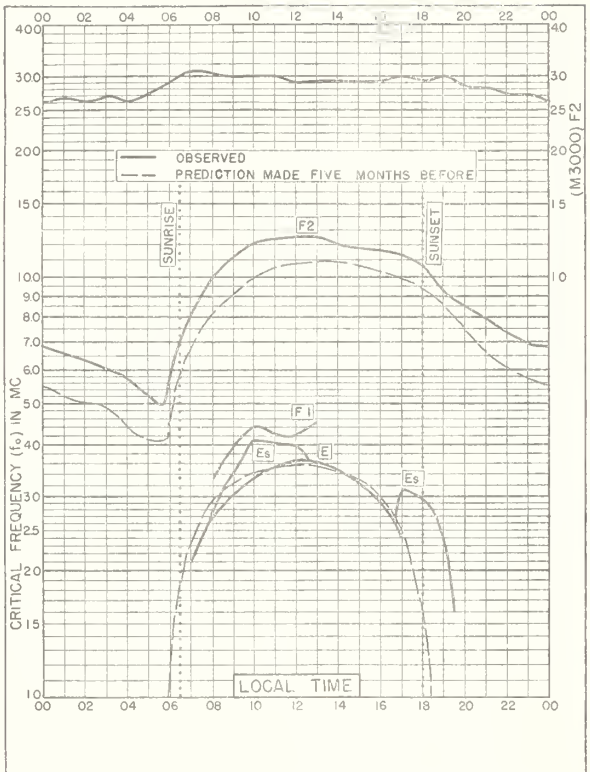

Fig. 65. FRIBOURG, GERMANY
48.1°N, 7.8°E MARCH 1949

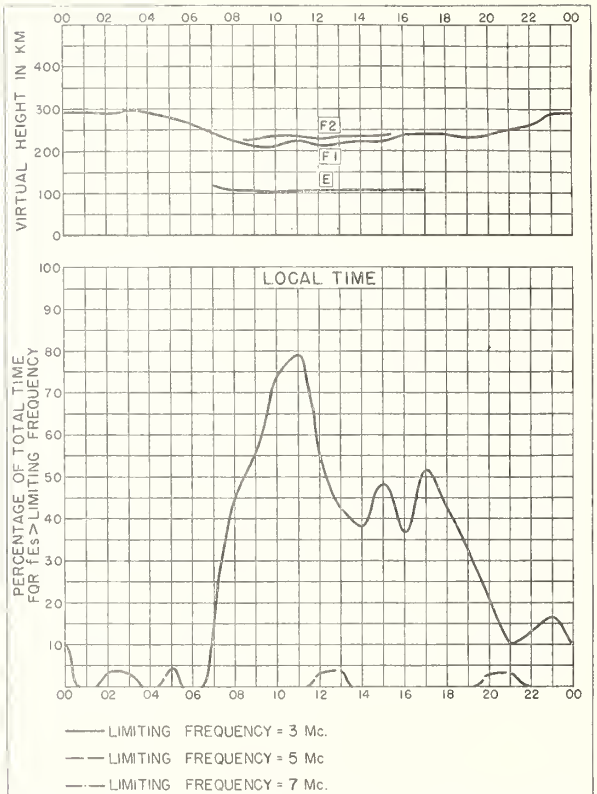

Fig. 66. FRIBOURG, GERMANY MARCH 1949

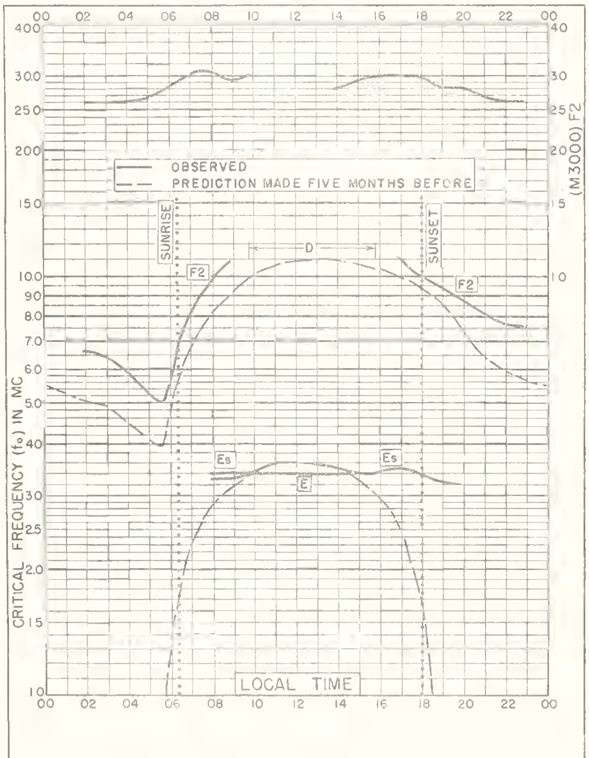

Fig. 67. POITIERS, FRANCE
46.6°N, 2.0°W MARCH 1949

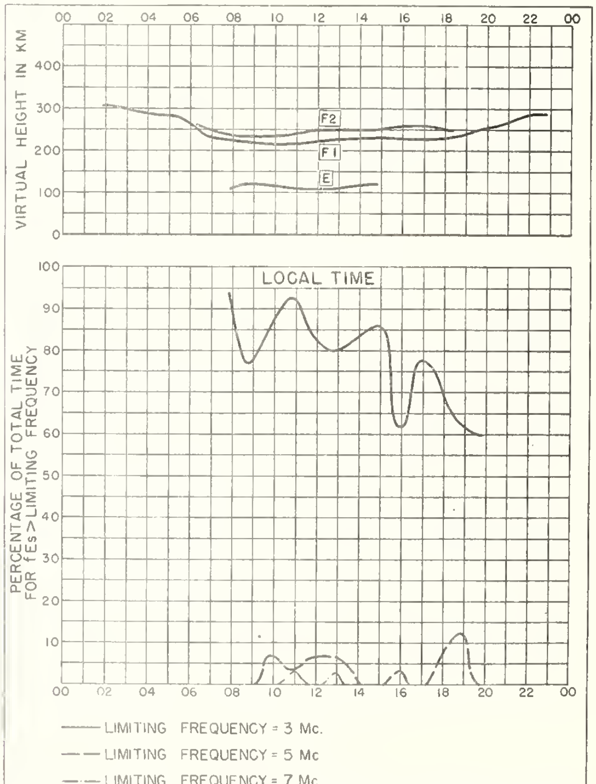

Fig. 68. POITIERS, FRANCE MARCH 1949

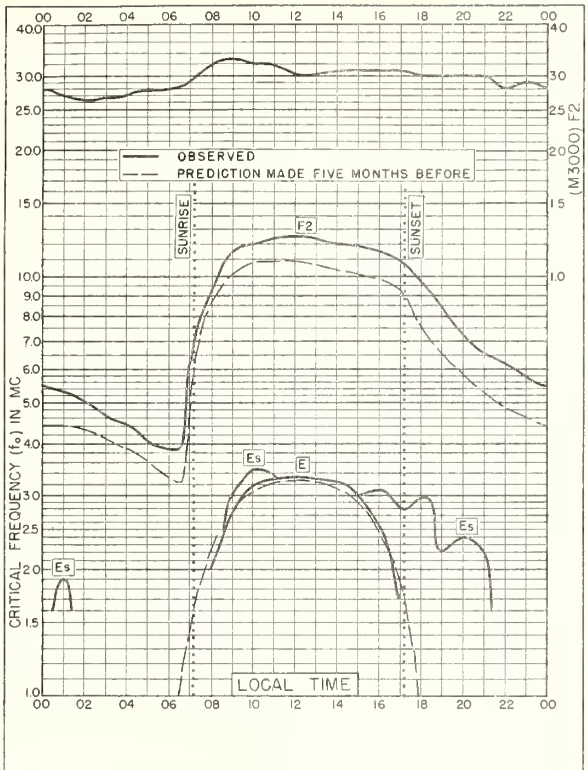

Fig. 69. FRIBOURG, GERMANY
48.1°N, 7.8°E FEBRUARY 1949

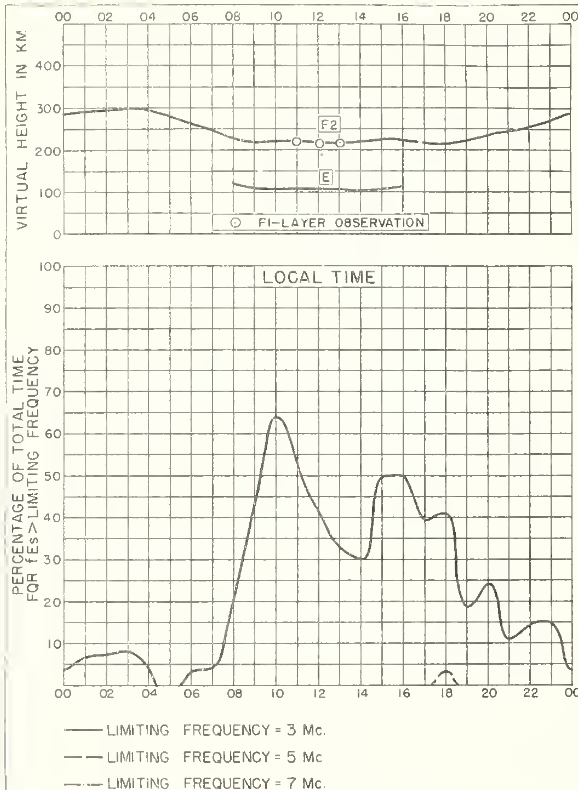

Fig. 70. FRIBOURG, GERMANY FEBRUARY 1949

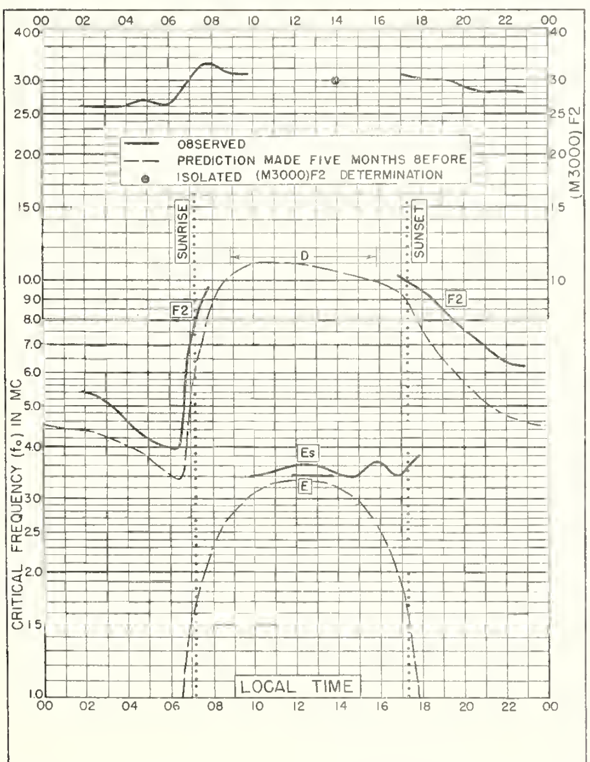

Fig. 71. POITIERS, FRANCE
46.6°N, 2.0°W FEBRUARY 1949

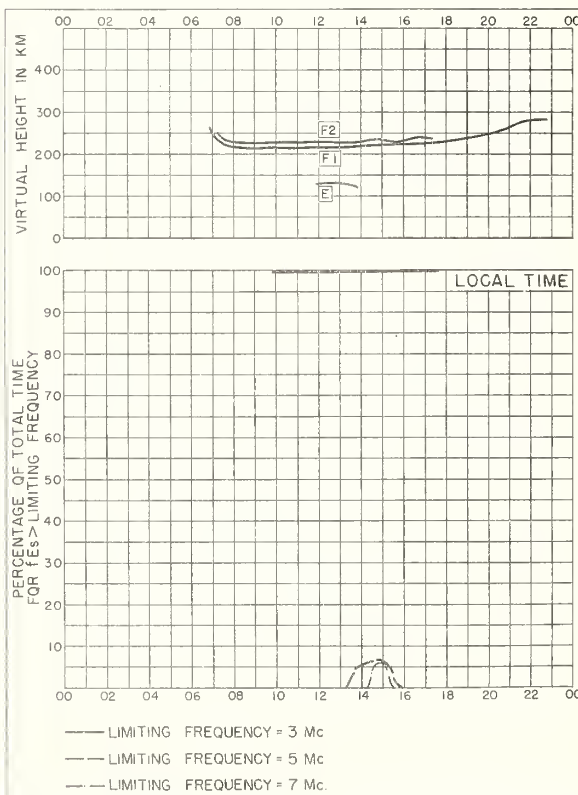

Fig. 72. POITIERS, FRANCE FEBRUARY 1949

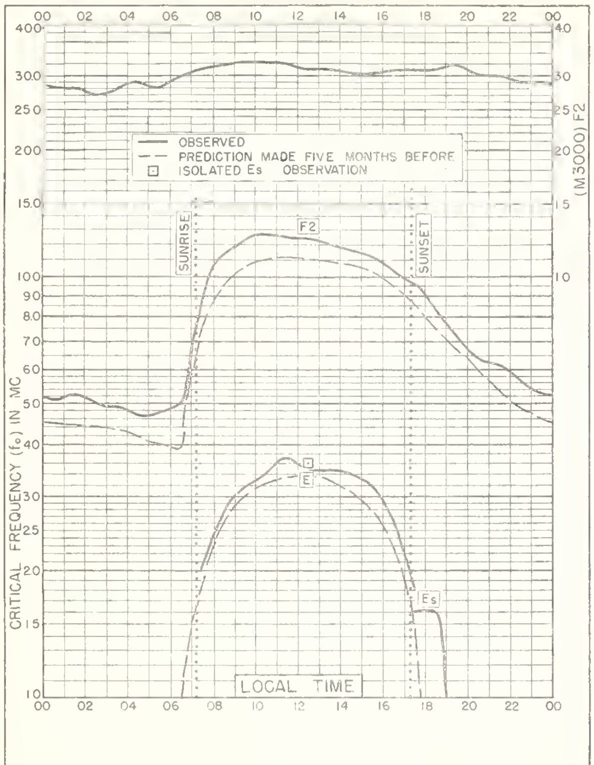

Fig. 73. WAKKANAI, JAPAN
45.4°N, 141.7°E FEBRUARY 1949

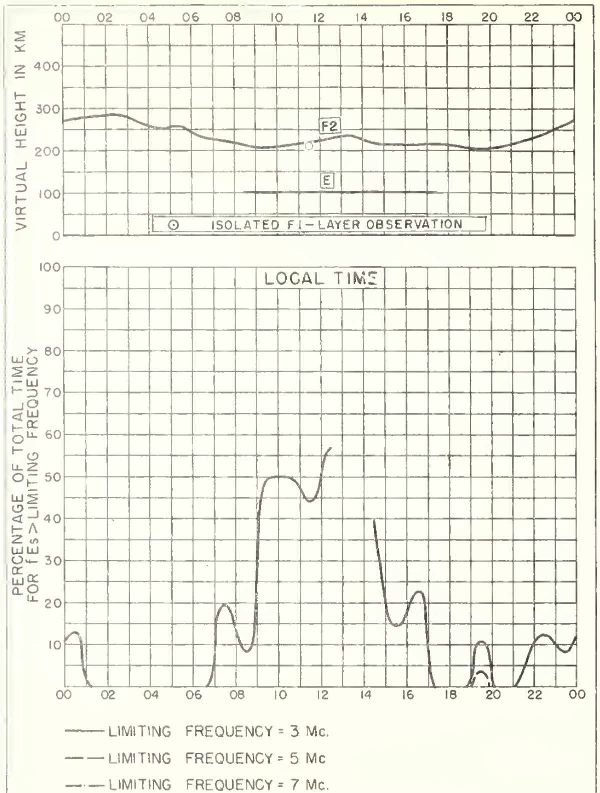

Fig. 74. WAKKANAI, JAPAN FEBRUARY 1949

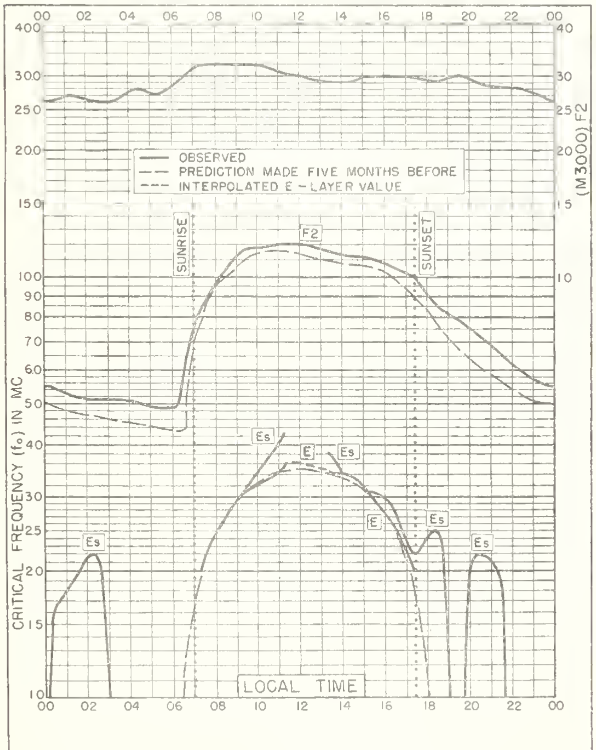

Fig. 75. FUKAURA, JAPAN
40.6°N, 139.9°E FEBRUARY 1949

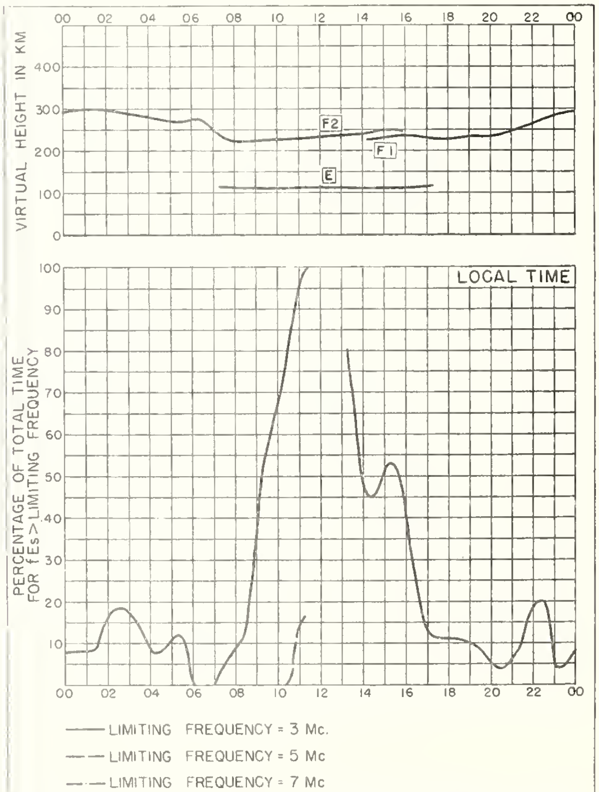

Fig. 76. FUKAURA, JAPAN FEBRUARY 1949

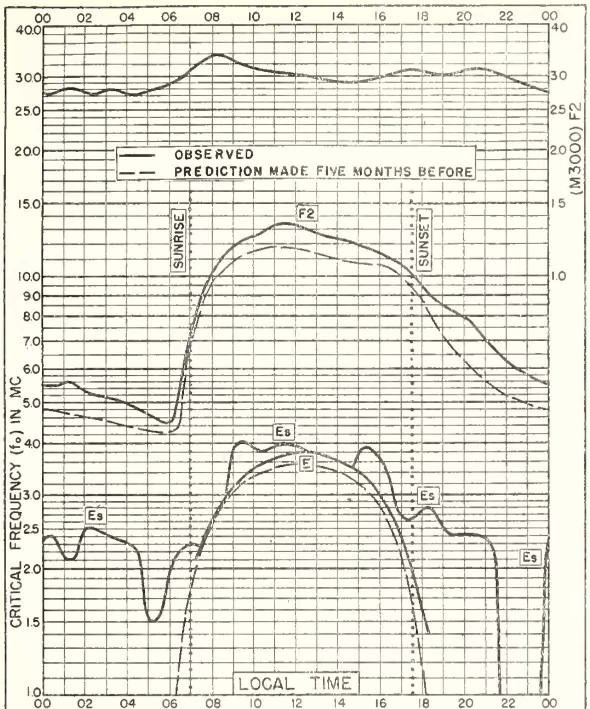

Fig. 77. SHIBATA, JAPAN
37.9°N, 139.3°E FEBRUARY 1949

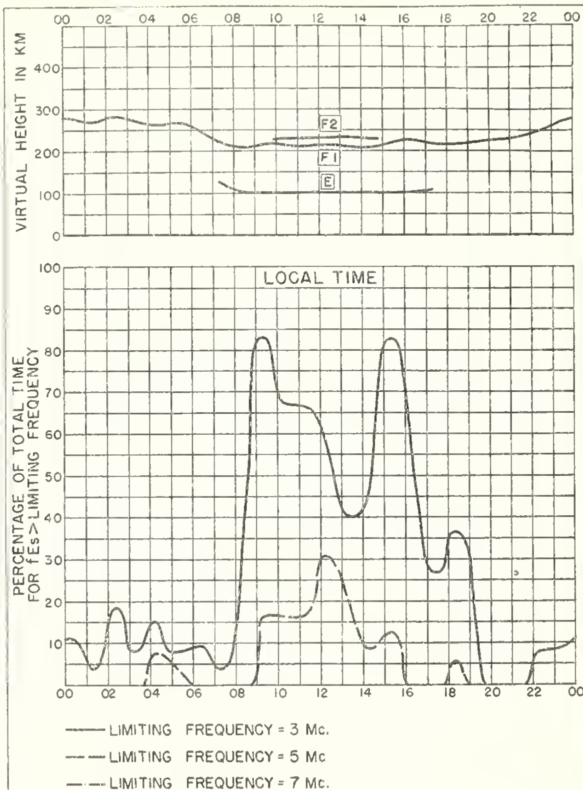

Fig. 78. SHIBATA, JAPAN FEBRUARY 1949

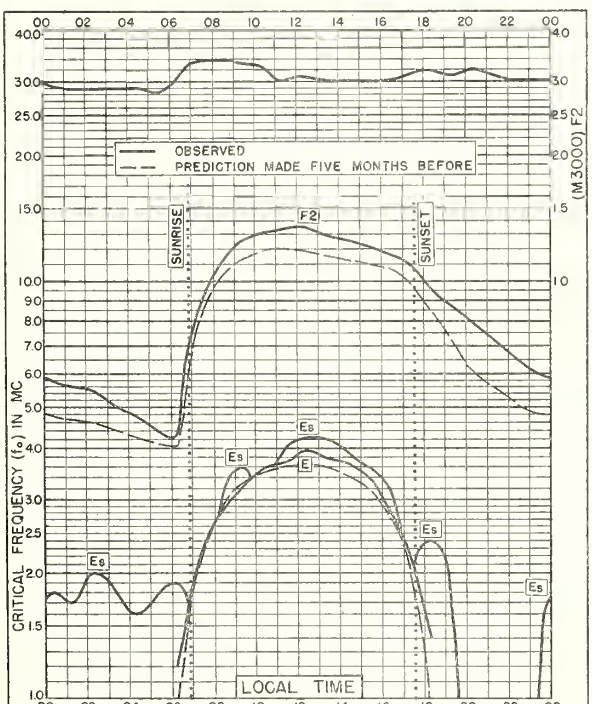

Fig. 79. TOKYO, JAPAN
35.7°N, 139.5°E FEBRUARY 1949

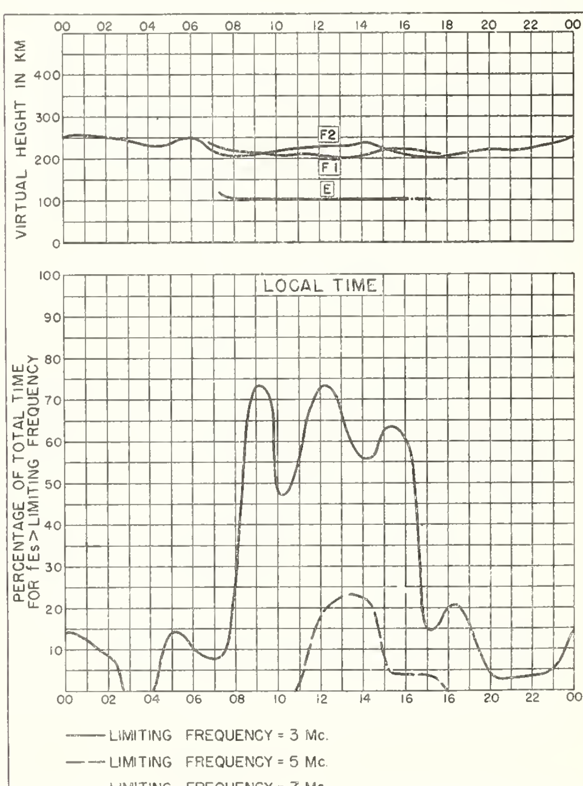

Fig. 80. TOKYO, JAPAN FEBRUARY 1949

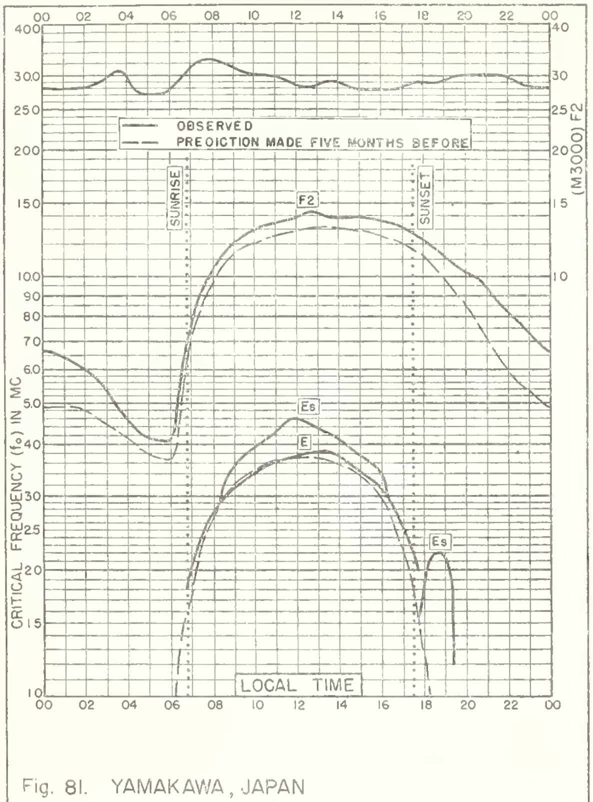

Fig. 81. YAMAKAWA, JAPAN
31. 2°N, 130. 6°E FEBRUARY 1949

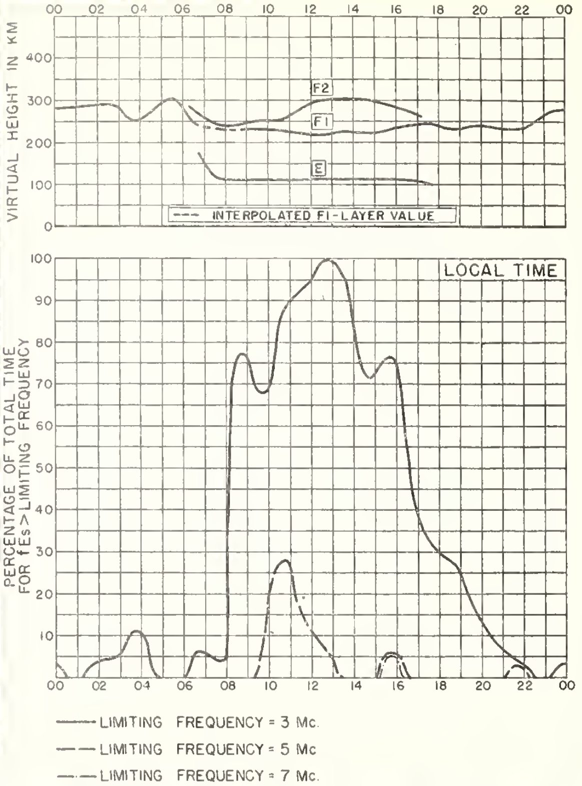

Fig. 82. YAMAKAWA, JAPAN FEBRUARY 1949

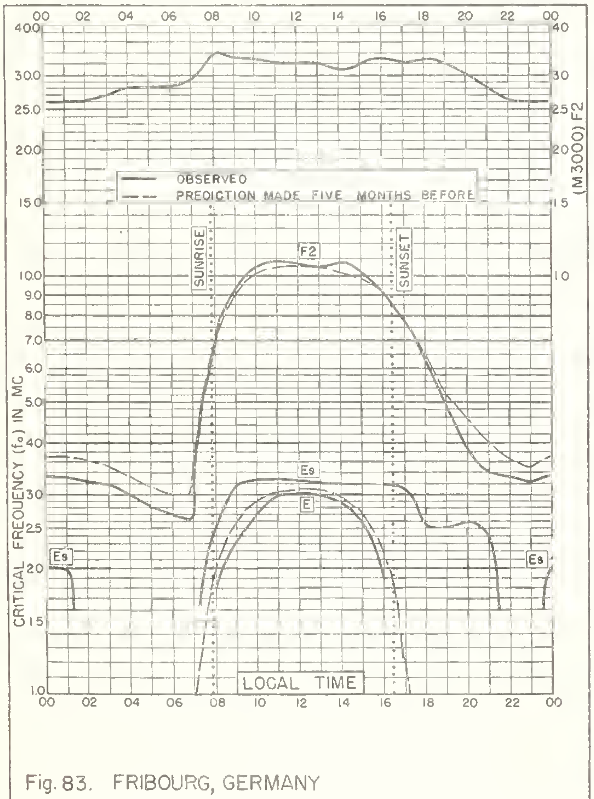

Fig. 83. FRIBOURG, GERMANY
48.1°N, 7. 8°E JANUARY 1949

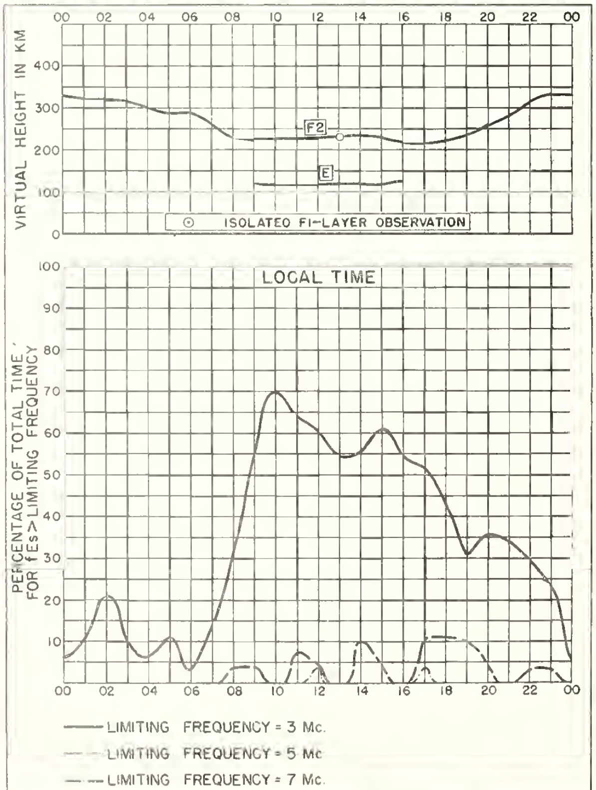

Fig. 84. FRIBOURG, GERMANY JANUARY 1949

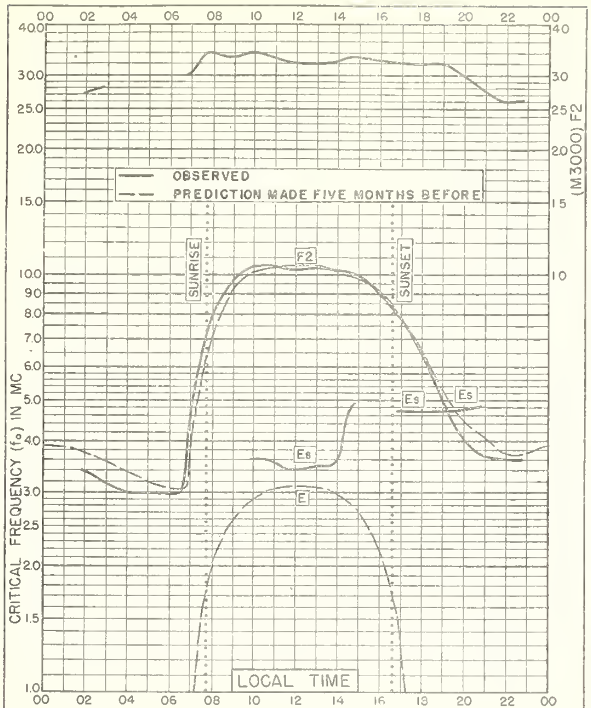

Fig. 85. POITIERS, FRANCE
46.6°N, 2.0°W JANUARY 1949

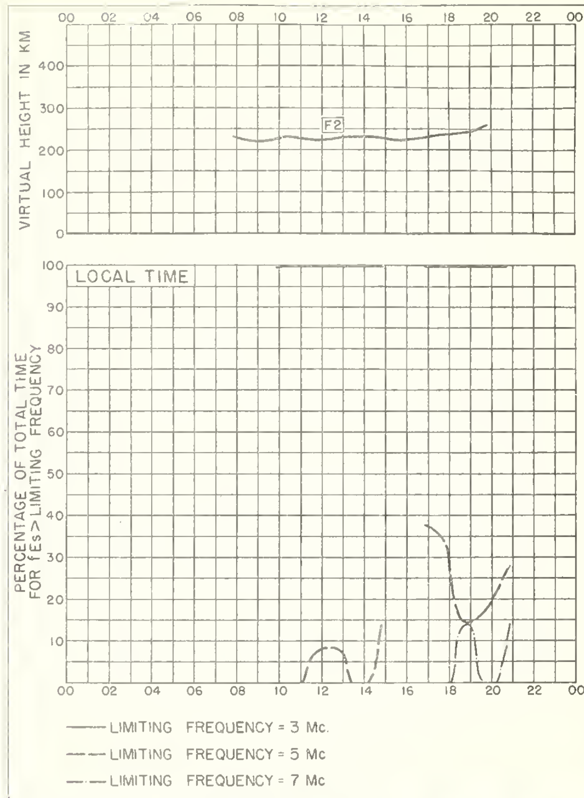

Fig. 86. POITIERS, FRANCE JANUARY 1949

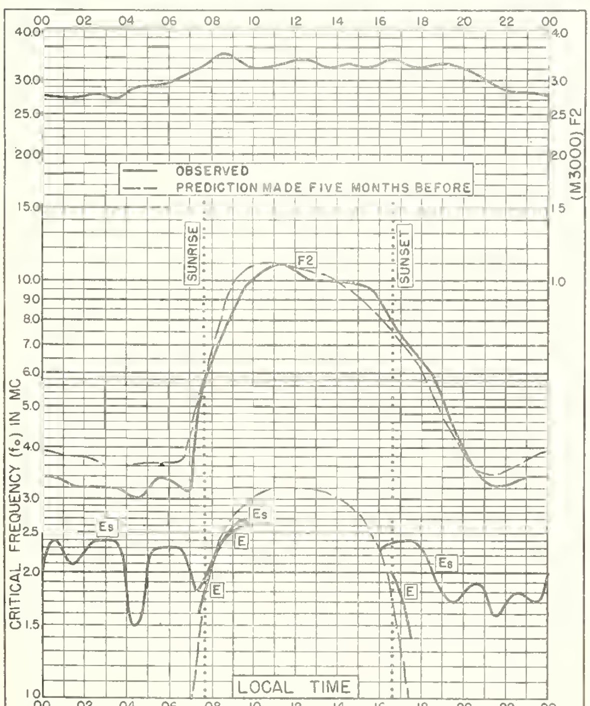

Fig. 87. WAKKANAI, JAPAN
45.4°N, 141.7°E JANUARY 1949

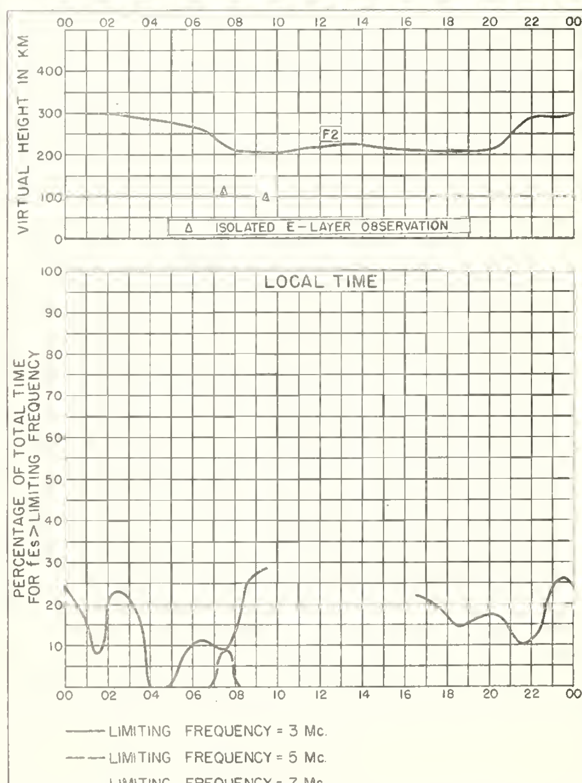

Fig. 88. WAKKANAI, JAPAN JANUARY 1949

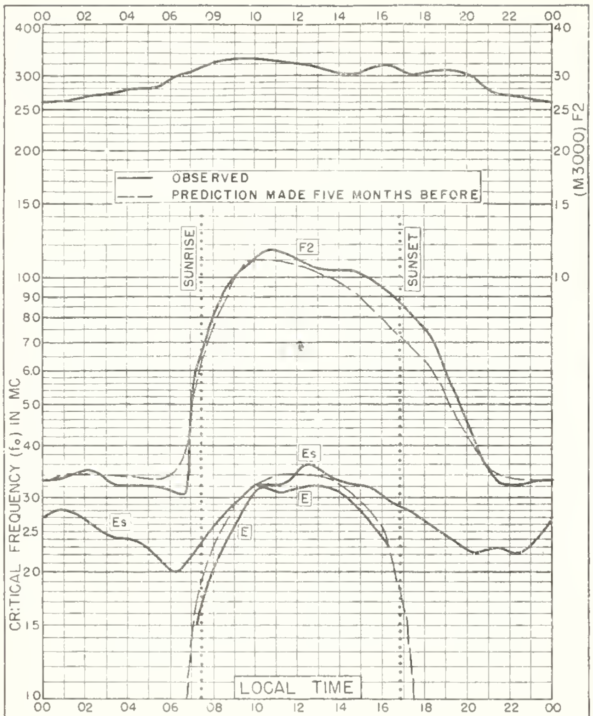

Fig. 89. FUKAURA, JAPAN
40.6°N, 139.9°E JANUARY 1949

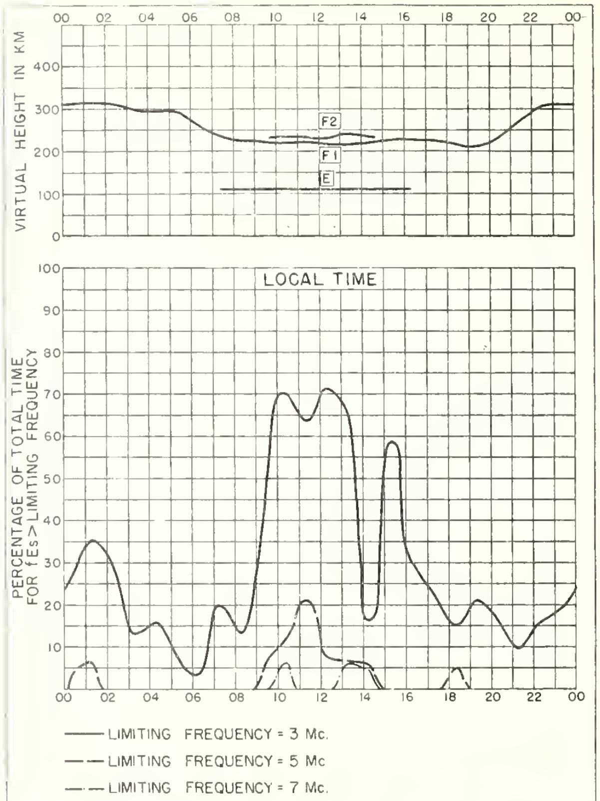

Fig. 90. FUKAURA, JAPAN JANUARY 1949

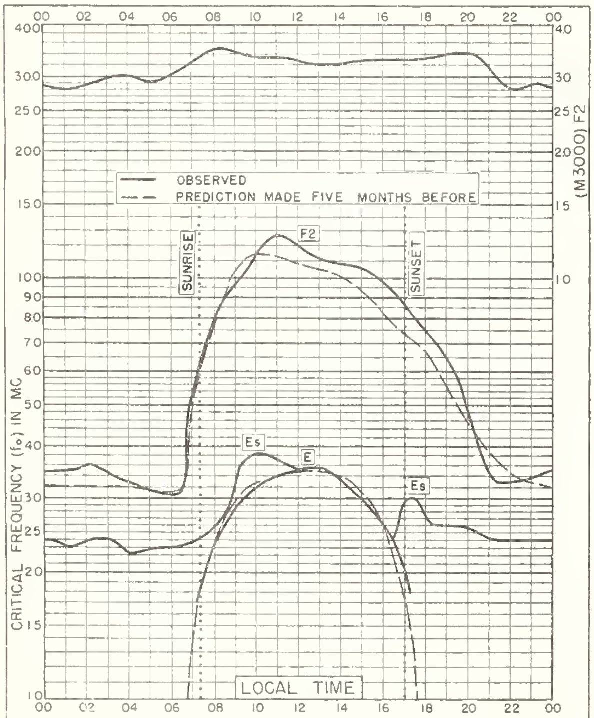

Fig 91. SHIBATA, JAPAN
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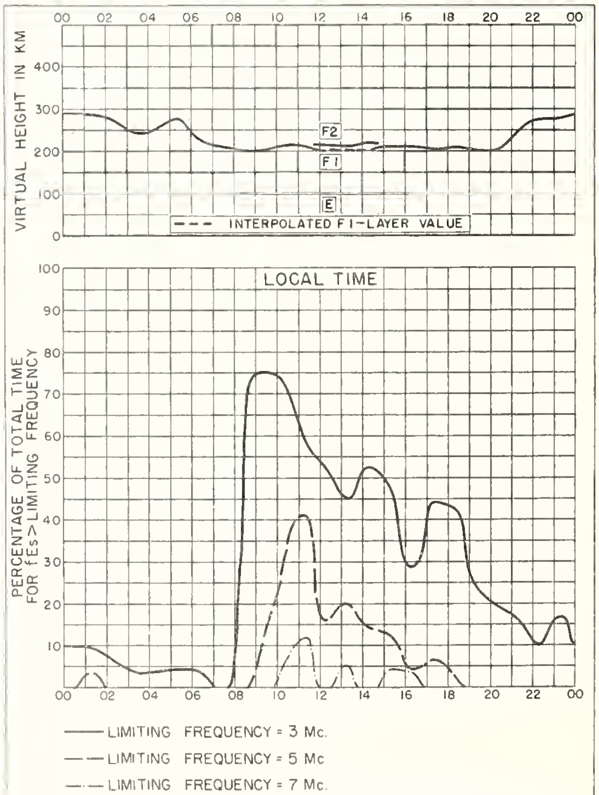

Fig. 92. SHIBATA, JAPAN JANUARY 1949

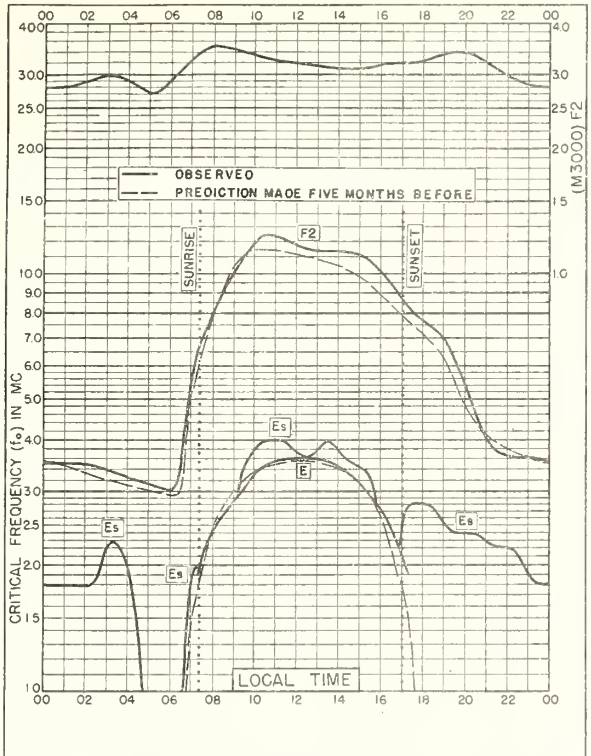

Fig. 93. TOKYO, JAPAN
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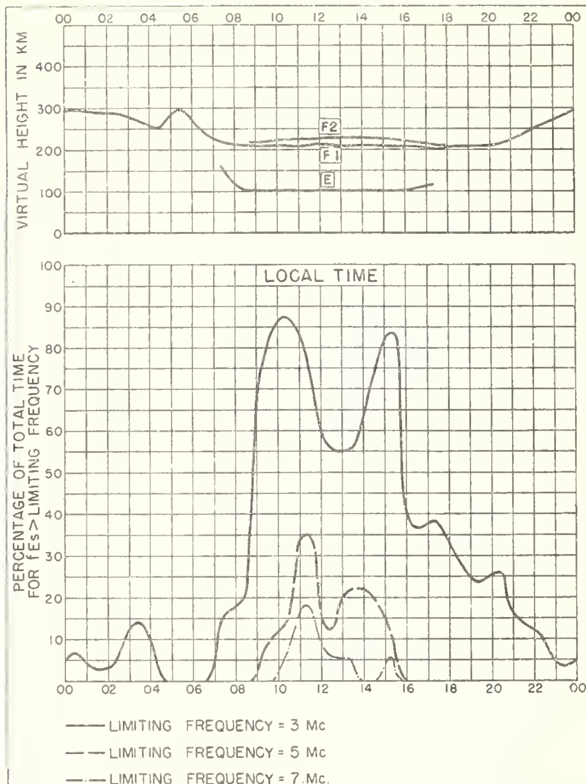

Fig. 94. TOKYO, JAPAN JANUARY 1949

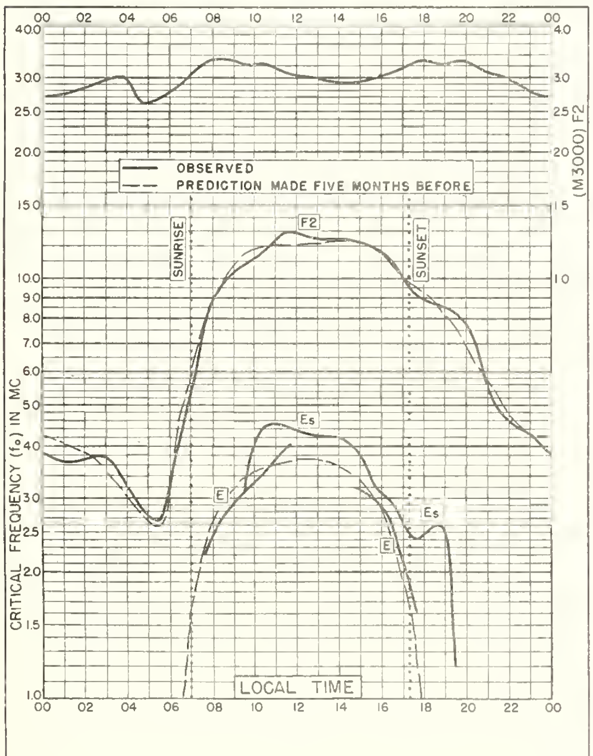

Fig. 95. YAMAKAWA, JAPAN
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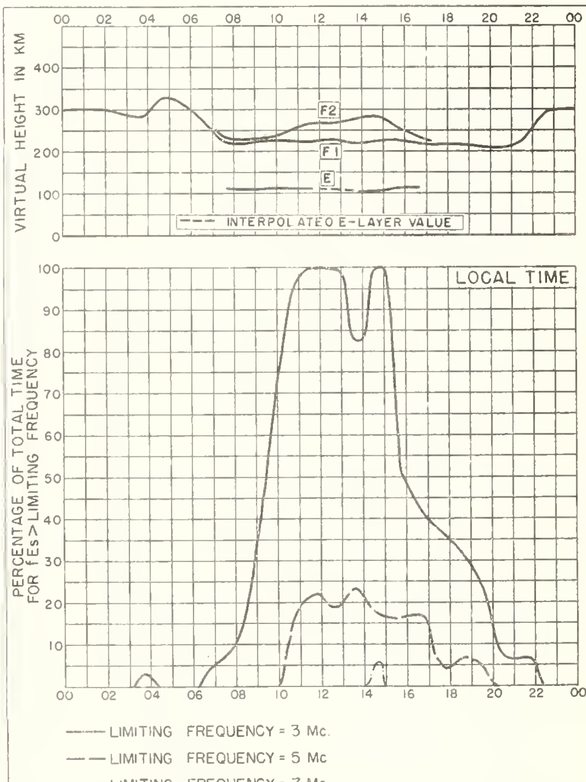

Fig. 96. YAMAKAWA, JAPAN JANUARY 1949

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CRPL and IRPL Reports

[A list of CRPL Section Reports is available from the Central Radio Propagation Laboratory upon request]

Daily:

Radio disturbance warnings, every half hour from broadcast station WWV of the National Bureau of Standards.
Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

Weekly:

CRPL–J. Radio Propagation Forecast (of days most likely to be disturbed during following month).

Semimonthly:

CRPL–Ja. Semimonthly Frequency Revision Factors for CRPL Basic Radio Propagation Prediction Reports.

Monthly:

CRPL–D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11–499–, monthly supplements to TM 11–499; Dept. of the Navy, DNC–13–1 ( ), monthly supplements to DNC–13–1.)
CRPL–F. Ionospheric Data.

Quarterly:

*IRPL–A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.
*IRPL–H. Frequency Guide for Operating Personnel.

Circulars of the National Bureau of Standards:

NBS Circular 462. Ionospheric Radio Propagation.
NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

Reports issued in past:

IRPL–C61. Report of the International Radio Propagation Conference, 17 April to 5 May 1944.
IRPL–G1 through G12. Correlation of D. F. Errors With Ionospheric Conditions.
IRPL–R. Nonscheduled reports:

- R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.
- R5. Criteria for Ionospheric Storminess.
- R6. Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
- R7. Second Report on Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
- R9. An Automatic Instantaneous Indicator of Skip Distance and MUF.
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- R11. A Nomographic Method for Both Prediction and Observation Correlation of Ionosphere Characteristics.
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- R14. A Graphical Method for Calculating Ground Reflection Coefficients.
- R15. Predicted Limits for *F*2-layer Radio Transmission Throughout the Solar Cycle.
- R17. Japanese Ionospheric Data—1943.
- R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.
- R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)
- R23. Solar-Cycle Data for Correlation with Radio Propagation Phenomena.
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- R30. Disturbance Rating in Values of IRPL Quality-Figure Scale from A. T. & T. Co. Transmission Disturbance Reports to Replace T. D. Figures as Reported.
- R31. North Atlantic Radio Propagation Disturbances, October 1943 Through October 1945.
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- R34. The Interpretation of Recorded Values of *fEs*.
- R35. Comparison of Percentage of Total Time of Second-Multiple *Es* Reflections and That of *fEs* in Excess of 3 Mc.

IRPL–T. Reports on tropospheric propagation:

- T1. Radar operation and weather. (Superseded by JANP 101.)
- T2. Radar coverage and weather. (Superseded by JANP 102.)

CRPL–T3. Tropospheric Propagation and Radio-Meteorology. (Reissue of Columbia Wave Propagation Group WPG–5.)

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